BLACKSWIFT

PROGRAM SOLICITATION

08-02

Defense Advanced Research Projects Agency
DARPA/TTO
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1.0 INTRODUCTION

The joint DARPA/USAF Blackswift flight test program will develop a reusable, air-breathing hypersonic testbed to demonstrate a runway take-off, Mach 6+ cruise for at least 60 seconds, lateral maneuver, aileron roll, and a runway landing. It is envisioned that flying this reusable hypersonic testbed in a relevant, flight environment will permit the future development of enhanced-capability reusable hypersonic cruise vehicles for intelligence, surveillance, reconnaissance, strike or other national need missions.

Blackswift is a jointly funded and managed program by the DARPA Tactical Technology Office and the Air Force Research Laboratory Wright Patterson Air Force Base. DARPA will provide the Program Manager and the Air Force will provide the Deputy Program Manager and Integrated Product Team leaders.

The Government seeks a fixed price payable milestone proposal from the Offeror in a FAR-based contract and a proposal based on an Other Transaction Agreement (OTA). The Government desires to remunerate the Offeror for work performed by means of incremental milestone payments based on the successful accomplishment of specific tasks or products**.** A model contract and agreement is provided in Appendix A.

2.0 BACKGROUND

The Blackswift flight test program will develop and flight test a reusable, air-breathing hypersonic testbed to validate key technologies developed in the DARPA/USAF Falcon program. Falcon's program objectives were to develop and demonstrate hypersonic technologies that will enable prompt global reach missions. The future vision for this capability includes a reusable Hypersonic Cruise Vehicle (HCV). Falcon is developing and demonstrating the technologies that will be required by an HCV: high lift-to-drag aerodynamics; high-speed, turbine-based combined cycle propulsion; high-temperature materials; thermal protection systems; and advanced guidance, navigation, and control. The Falcon program addressed the implications of hypersonic flight and reusability by developing a series of hypersonic technology vehicles (HTVs) to incrementally demonstrate these required technologies in flight.

The Hypersonic Technology Vehicle 1 (HTV-1) is an unpowered, maneuverable, hypersonic re-entry vehicle integrated with state-of-the-art hypersonic technologies to address materials and fabrication challenges. A set of HTV-1 ground tests were conducted to develop and validate the vehicle's aerodynamic, aero-thermal, and thermal-structural performance as well as to validate advanced carbon-carbon manufacturing approaches.

HTV-2 is a second generation design developed under Falcon that incorporates advanced aerodynamic configuration and thermal protection systems, and improved guidance, navigation and control systems for greatly improved performance compared with HTV-1. The HTV-2 detailed design has been completed and an aeroshell prototype fabricated. Two HTV-2 flight tests will be conducted in 2009 launched from Vandenberg Air Force Base using the Minotaur IV Lite launch system.

The Falcon program originally planned to develop a third Hypersonic Technology Vehicle (HTV-3) that would focus on reusable materials. However early on in the execution of Phase II of Falcon, DARPA elected to exercise an option to fund development of propulsion technology necessary to realize a reusable hypersonic testbed. This task has the objective of developing a reusable, hydrocarbon fueled, turbine based combined cycle propulsion system capable of operating from take-off from a conventional runway up to speeds greater than Mach 6. Propulsion advances in this effort led to the decision to evolve HTV-3 into a testbed that would take off from a conventional runway, cruise at Mach 6, and land back on a runway. This new design was subsequently designated HTV-3X. This hypersonic flight testbed would allow demonstration of key technologies such as efficient aerodynamic shaping for high lift to drag, lightweight and durable (reusable) high-temperature materials and thermal management techniques including active cooling, autonomous flight control, and turbine-based combined cycle propulsion. It is envisioned that flying this hypersonic testbed in a relevant flight environment would permit the future development of enhanced-capability reusable high-speed vehicles for intelligence, surveillance, reconnaissance, strike or other critical national missions.

HTV-3X uses an air-breathing propulsion system consisting of a turbine based combined cycle (TBCC) engine. Propulsion from take-off through supersonic flight regimes and landing is provided by turbojet engines. In high supersonic and hypersonic flight regimes, propulsion is

provided by a scramjet engine (also referred to as a dual mode ramjet engine). These engine technologies are currently being developed under the DARPA/AF High Speed Turbojet Engine Development (HiSTED) program for the high-performance turbojet and under Falcon for the scramjet. Integration of these two engine types into an integrated propulsion system represents the greatest technical challenge for the HTV-3X design.

The HTV-3X conceptual design is currently in development and is supported by substantial wind tunnel testing of the vehicle's aerodynamics. The conceptual design effort is scheduled to be completed in April 2008.

The feasibility of exploring and developing hypersonic flight as exemplified by the HTV-3X concept and the potential this technology offers to substantially enhance future warfighter capability has motivated DARPA and the US Air Force to jointly pursue a hypersonic flight test program called Blackswift. Due to the scope and importance of this program, the Government has elected to conduct an open competition in order to solicit the best technologies and approaches the aerospace community has to offer in the most effective and efficient program construct. Offerors are encouraged to propose a flight testbed concept that meets or exceeds the technical objectives of the Blackswift flight test program and can be realized within funding constraints in a timeframe that satisfies the Government's expectations. See section 5.2.26 of this solicitation for instructions on how to request program documentation.

3.0 PROGRAM DESCRIPTION

This section provides a description of the Blackswift flight test program including the reusable testbed design and scope of the flight demonstration program.

3.1 System Requirements

The Government seeks development of a reusable hypersonic testbed that utilizes an integrated air-breathing propulsion system. This reusable testbed will be used to conduct a vigorous flight test campaign in which key enabling technologies are demonstrated and the operational envelope is incrementally expanded in successive flights. The testbed shall take-off and land under its own power using a conventional runway. The ultimate flight demonstration shall consist of a powered take-off, climb and acceleration to a Mach 6+ cruise speed, sustain this Mach 6+ cruise speed in level flight for at least 60 seconds, demonstrate maneuverability by executing an aileron roll and land under power.

The Government is soliciting original conceptual flight testbed design approaches from the US aerospace community that meet or exceed these objectives. The Offeror's response to this solicitation should describe how it plans to evolve the testbed design including risk reduction and technology maturation, build a reusable Blackswift testbed and conduct a flight test program demonstrating requisite performance and operability metrics and validating analytical design tools.

The Government has established the system requirements for the Blackswift testbed which the contractor must meet or exceed in the execution of the subject program. The Systems Requirements Document is provided in Appendix B.

3.2 Program Plan

The Blackswift flight test program structure with notional schedule is shown in Figure 3.1. Phase I of Blackswift will consist of preliminary design and risk reduction activities culminating with a Preliminary Design Review (PDR). Phase II will consist of detailed design, component maturation and system integration including subsystem verification testing, flight test planning and will culminate with a Critical Design Review (CDR). Testbed fabrication and flight testing will be accomplished in Phase III. The Offeror may propose an alternate program plan including milestone events and associated milestone payments. The required milestone events are delineated in Section 4.4.

The government intends to review the program at the end of each phase and may elect, solely at its discretion, to either continue or terminate the program. Any contract/agreement issued in response to this solicitation will result in a fixed price payable milestone Phase I award with priced options for Phase II and Phase III.

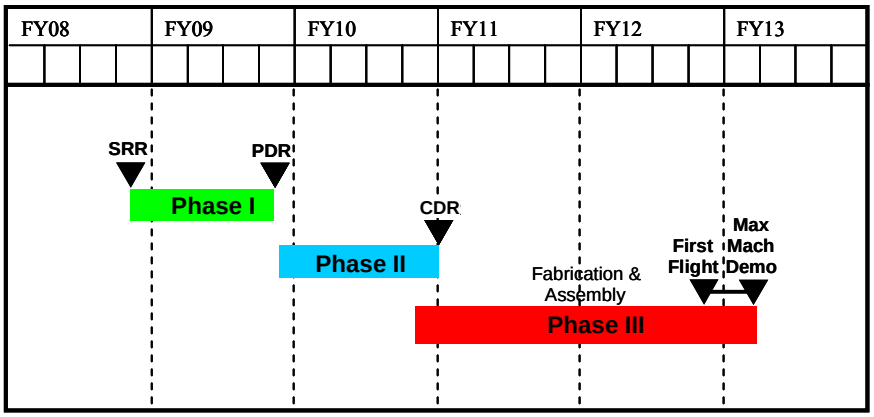

Figure 3.1 Program Plan

3.3 Management Approach

DARPA is responsible for overall management of the Blackswift flight test program, including technical direction, acquisition, and security. DARPA will provide the Program Manager (PM) and the Air Force will provide the Deputy Program Manager (DPM). The DARPA PM is a member of DARPA's Tactical Technology Office and the Air Force Deputy PM resides at AFRL/WPAFB. The Air Force Flight Test Center is designated as the Responsible Test Organization which will identify participating organizations to provide the support required to conduct the flight test program. DARPA and the Air Force will use a diverse government team to evaluate the Offeror's proposal and conduct milestone reviews.

The Offeror is expected to implement a streamlined approach to program management that includes team member cooperation, small staffs, face-to-face communications, real-time decision-making and problem solving, and short, direct lines of authority.

4.0 STATEMENT OF OBJECTIVES

This section outlines the Government's objectives for the Blackswift flight test program. The Offeror shall provide in its response to this solicitation a Task Description Document (TDD) that defines and describes the specific tasks it will execute to accomplish this Statement of Objectives (SOO).

4.1 Overview

The primary program objective is to conduct a flight test campaign of the Offeror's Blackswift testbed. The Blackswift testbed shall have an operational life sufficient to support an extended flight test program.

4.2 Program Management

The Offeror shall establish and maintain program management to plan, organize, direct, coordinate, control, and approve actions undertaken to accomplish overall program objectives. The management team shall provide management over the administrative, contracts, subcontracts, technical, manufacturing, quality assurance, security efforts, and ground/flight tests.

The Offeror shall provide recommendations to the Government with regard to redirection of program activities as required to meet overall program cost, schedule, and technical objectives.

The Offeror shall identify and provide key personnel including the Program Manager, Deputy Program Manager, Chief Engineer, System Engineer/Architect, Integrated Product Team/Functional Leads, and subcontractor Principal Investigators. Resumes for these personnel shall be provided.

The Offeror shall provide IPT Leads whose responsibilities include daily and weekly meetings as required to manage resources to meet cost, technical and schedule commitments. The IPT Leads also provide oversight and direction of all their technical, cost, and schedule activities, including subcontracts, technical, manufacturing efforts for the Blackswift effort, and shall be the primary interface with the Government for all IPT activities. The IPT Leads will provide liaison with subsystem management, program management, and provide presentations when necessary. The IPT Leads shall provide systems engineering and integration support to ensure proper coordination of component and subsystem integration into the testbed. The Offeror shall ensure that a cognizant representative from each IPT is available to respond to Government time critical needs.

The Offeror shall support milestone reviews, program/design reviews, management actions and technical performance measure (TPM) tracking and present program status, including technical, schedule, cost, and risk areas during Program Management Reviews (PMR).

The Offeror shall hold and/or support meetings, reviews, and communications that they or the Government deem necessary to address program objectives.

The Offeror shall prepare for, conduct, and close out action items resulting from the Blackswift System Requirements Review (SRR), Preliminary Design Reviews (PDR), and Critical Design Reviews (CDR).

The Offeror shall support weekly telephone status reviews as required during the program.

The Offeror will provide weekly inchstone reports starting no later than the fifth week after the kick-off meeting.

4.2.1. Team Management

The Offeror's program management and technical team including subcontractors shall function to support the program. The Offeror shall establish and implement procedures that integrate all engineering teams such that the Government and/or its authorized representatives have access to team members in a seamless fashion. The Offeror shall ensure that the Government and/or its authorized representatives can participate in subcontractor reviews and other significant meetings.

4.2.2. Data Management

The Offeror shall implement and maintain a data management program for control of data and provide remote access for the Government in accordance with the Offeror's configuration management plan.

4.2.3. Information Technology

The Offeror shall ensure sufficient classified and unclassified computing capability is available at the prime and subcontract level to support the Blackswift flight test program.

4.2.4. Quality Management

The Offeror shall develop and maintain a quality assurance plan consistent with a compliant quality system. The procedures, planning, and all other documents and data that comprise the quality system shall be made available to the customer for review, as required. Upon reasonable notification to the Offeror, Government personnel shall have the right to send representatives to the Offeror's facility or its subcontractor's facility to verify contract/agreement compliance, and conduct program oversight as required. The Offeror shall maintain effective control of the quality of supplies at all stages of performance of work under the contract/agreement and shall provide access to records related to design, development and testing of supplies and to all test pieces and samples that may be required during any quality audit or surveillance.

4.2.5. Safety Management

The Offeror shall develop and adhere to system safety requirements, criteria and safety plans.

4.2.6. Security

The Offeror shall develop and implement a security plan using the draft Blackswift Flight Testbed Security Classification Guide as guidance for proposal preparation. The draft guide can be obtained through a written request to PS08-02@darpa.mil and should use "Blackswift Classification Guide" as the subject line when submitting the request. See section 5.2.26 of this solicitation for additional information on receiving program documentation under this solicitation. A draft DoD Contract Security Classification Specification, DD254 is provided in Appendix F.

4.2.7. Schedule – IMP/IMS

The Offeror shall develop an Integrated Master Plan (IMP) and Integrated Master Schedule (IMS). The integrated master schedule shall incorporate schedules for flight test operations, and the test range. The Offeror shall develop and status the subsystem integrated master schedule for incorporation into the Blackswift flight test program integrated master schedule. This task comprises the effort necessary to provide oversight of the budget, schedule, and technical direction. The Offeror shall continually assess the IMS to identify critical path areas and provide contingency plans for high risk technical areas.

4.2.8. Work Breakdown Structure

The Offeror shall develop and provide to the Government a Work Breakdown Structure (WBS) that provides a common numbering system that links all program elements together. This numbering system shall integrate all system specifications with the TDD, EVM, IMP, and IMS and must be used throughout all program documentation. The systems specifications TDD, EVM, IMP, and IMS shall be consistent down through level 4 of the WBS.

4.2.9. Cost – Earned Value Management System and Reporting

The Offeror shall implement an Earned Value Management System (EVMS) that integrates cost and schedule data against the program's work breakdown structure. The Offeror shall provide cumulative performance using technical performance measures calculations, review earned value (EV) metrics, update EV charts, analyze and report variances and provide estimates to complete (ETC).

4.2.10. Government Furnished Items & Other Support Assets

The Offeror shall identify and coordinate the necessary Government Furnished Property, Equipment, Information, Facilities and other support assets required to execute the Blackswift flight test program. Coordination includes identifying the WBS budget allocations to substantiate the scope of work identified and costs as well as interacting with the appropriate

Government points of contact to ensure that the Government assets are scheduled and are available for Blackswift needs.

4.2.11. Reporting and Documentation

The Offeror shall prepare and submit to the Government program office the following written reports:

4.2.11.1. Phase Completion Technical Reports

A detailed technical report covering all activities performed in Phase I shall be submitted to Government within 90 days following the PDR. A milestone payment shall be associated with the submission of this report and its approval by the Government. Major test activities shall be documented within 60 days of test completion and provided to the Government team.

A detailed technical report covering all activities performed in Phase II shall be submitted to Government within 90 days following CDR. A milestone payment shall be associated with the submission of this report and its approval by the Government. Major test activities shall be documented within 60 days of test completion and provided to the Government team.

A Phase III detailed technical report covering the flight test results and correlation with prior phase ground tests and analysis. This report shall be submitted to Government within 90 days following conclusion of the flight test program. A milestone payment shall be associated with the submission of this report and its approval by the Government.

4.2.11.2. Quarterly Milestone Reports

The Offeror shall prepare and submit to the Government Program Office a Quarterly Milestone Report for each milestone event. This report shall provide sufficient documentation or otherwise demonstrate that major tasks or products associated with this milestone have been accomplished and that success criteria for each have been attained. Payment to the Offeror for accomplishment of the subject milestone will be dependent upon the Government's acceptance of this report.

4.2.11.3. Monthly Status Reports

The Offeror shall prepare and submit to the Government's Program Office a monthly status report summarizing technical progress achieved during the reporting period, problems and issues, and expected progress to be made for the subsequent reporting period. This information is to be provided by work package as defined by the WBS. This report shall also provide to the Government Program Office on a monthly basis an update to the IMS in Microsoft Project format and give explanations for variances with the program plan. The EVM data shall be reported in a business report submitted to the Government Program Offices on a monthly basis. This business report shall include expenditures by work package, deliverables performed, and variances caused by under-runs and over-runs in the cost performance report.

4.2.11.4. Weekly Reports

The Offeror shall submit weekly program inch-stones that describe, in detail, the technical, cost, and schedule performance of the program. The weekly inch-stone format will be defined by the Government at program kick-off and the first weekly inch-stone report shall be submitted by the Offeror no later than the fifth week after program kick-off and on a weekly basis thereafter.

4.3 Systems Engineering

The Offeror shall describe a complete systems engineering process (both hardware and software) for conducting the Blackswift flight test program. The description will detail how the Offeror will execute the systems engineering process activities of requirements analysis, functional analysis and allocation, synthesis, and systems analysis and configuration control commensurate with the Systems Requirement Document in Appendix B. The Offeror shall describe the organizational responsibilities and authority for the systems engineering effort.

In addition, the systems engineering process shall ensure the capture of technical knowledge acquired in the execution of the Blackswift flight test program. This includes advances in propulsion, aerothermodynamics, aero-structures, materials, controls, avionics, manufacturing, and thermal management. The extent of the knowledge captured will enable the assessment of adequacy of the analytical methods and design practices, and their correlation with test results both ground and flight.

The process shall establish a series of tracking tools that enable efficient assessment of program process to include:

> Technical performance measure (TPM): The Offeror shall provide a series of TPMs that relate to and are consistent with all levels of the system configuration, tracks the maturity of key risk areas, and forecasts the achievement of systems requirements.
>
> Risk management approach: The Offeror shall identify key technical risk areas consistent with achieving objectives contained in the Blackswift SRD and integrated master schedule. In addition, the approach shall quantify the risk level, and sensitivity of achieving system performance objectives. At a minimum the risk approach should identify:
>
> - The type of risk reduction activity (e.g., subsystem ground test, wind tunnel test, flight test, etc.)
> - The engineering effort involved (e.g., labor hours)
> - Alternative strategies to include fall back technologies, processes and trade studies if the maturation activities are unsuccessful.

4.4 Phase I Preliminary Design

The Blackswift flight test program shall commence with the conduct of the kick-off meeting at the beginning of Phase I Preliminary Design. A Systems Requirements Review (SRR) shall be held in conjunction with the kick-off meeting detailing the program plan which addresses this statement of objectives. The Offeror shall demonstrate that adequate resources have been allocated to complete the program within budget and on time. This shall include data and information from major sub-contractors, government and contractor-owned facilities, and suppliers. The Offeror shall also present the testbed configuration conceptual design. This meeting shall be held within one month following the Offeror's receipt of the Authorization to Proceed with the program from the Government.

Phase I shall focus upon developing the Blackswift testbed preliminary design and maturing technologies and reducing risks in key technical areas. The Offeror shall develop and submit to the Government a Risk Management Plan (RMP) to reduce risks to an acceptable level and identify specific metrics or thresholds required for critical item demonstrations.

4.4.1. Phase I Preliminary Design Review

A Preliminary Design Review (PDR) as defined in Appendix C, shall be conducted to evaluate the progress, technical adequacy, and risk of the testbed design; determine its compatibility with flight demonstration objectives and functionality; evaluate the degree of definition and assess the technical risk associated with the specific design and processes; and establish the existence and compatibility of the physical and functional interfaces. The Offeror may propose to conduct PDR incrementally to address subsystems individually. For software items, the PDR should evaluate the progress, consistency and technical adequacy of the design and test approach, and compatibility between software requirements, test requirements and the preliminary design. Following PDR, the Offeror should put the preliminary design under formal configuration control. Conduct of the PDR shall be designated a major milestone event and will serve as a gate for Government approval to continue the program into Phase II. Exit Criteria for the Preliminary Design Review, culminating Phase I, are given in Appendix C.

4.4.2. Phase I Milestones

The following events are Government specified milestones which the Offeror shall allocate to payable Phase I milestones:

1. Kick-off meeting/Systems Requirements Review
2. Preliminary Design Review
3. Phase I Technical Report Submitted and Approved

The Offeror shall identify additional events which shall be assigned to payable milestones in Phase I. The following are Government recommended events the Offeror should consider in compiling its Phase I milestones:

1. Thermal management system design analysis and materials trade study complete
2. Finite element thermal structural analysis of critical load paths and joints complete
3. Initial draft of manufacturing plan complete
4. Life cycle analysis of critical components and subsystems complete
5. Component and subsystem verification and validation plan complete
6. Preliminary design airframe/ propulsion system interface control document complete
7. Propulsion system cycle update complete
8. Propulsion system control system architecture defined
9. Inlet testing and analysis complete
10. Turbojet compressor distortion testing complete
11. Direct connect high speed combustor testing complete
12. Propulsion system nozzle static testing complete
13. Propulsion system nozzle jet effects testing complete
14. Preliminary design of integrated TBCC freejet test rig complete
15. Preliminary draft of avionics software and hardware architecture
16. Analytical demonstration of landing gear and braking systems complete

4.5 Phase II Critical Design

In Phase II Critical Design, the Offeror shall complete the Blackswift testbed design that satisfies system requirements and generate drawing packages suitable for hardware fabrication and assembly. All remaining risks shall be reduced to acceptable levels consistent with Critical Design Review (CDR) exit criteria provided in Appendix D. Integrated software and subsystems verification testing shall be conducted with hardware in the loop. Environmental testing at the subsystem and component level shall be conducted as appropriate to qualify for flight. The flight test plan shall be completed and all range safety and environmental issues addressed.

The Offeror shall identify all long lead items, their sources, and obtain Government approval to procure prior to CDR. The Offeror shall initiate long lead planning in support of the range preparation and documentation required for range approval.

4.5.1. Phase II Critical Design Review

A CDR as defined in Appendix D, shall be conducted prior to fabrication/production of flight hardware to ensure that the detailed design solution satisfies the configuration control requirements to conduct the Blackswift flight test campaign. This review shall establish a "build-to" design, validate compatibility among the configuration items, assess configuration items risk areas, demonstrate the capability to fabricate, code and integrate hardware and software and review the hardware drawing and work packages. For long lead items, this review may be conducted on an incremental basis but must be put in context of a critical path analysis and design interfaces and impacts assessed versus system requirements. The final Interface Control Document (ICD) should be complete at CDR.

4.5.2. Phase II Milestones

The following events are Government specified milestones which the Offeror shall allocate to payable Phase II milestones:

1. Critical Design Review
2. Phase II Technical Report Submitted and Approved

The Offeror shall identify additional events which shall be assigned to payable milestones spaced at regular intervals throughout Phase II to the extent practical. The following are Government recommended events the Offeror should consider in compiling its Phase II milestones:

1. Manufacturing demonstrations addressing unique materials and processes complete
2. Manufacturing and assembly plans complete
3. Preliminary Quantitative Risk Assessment complete
4. Preliminary Flight Test Plan complete
5. Preliminary Range Safety Plan complete
6. Preliminary Environmental Assessment complete
7. Integrated propulsion system cycle deck complete
8. Final propulsion system life cycle analysis complete
9. Freejet TBCC (including turbojet and ramjet/scramjet) fuel-cooled propulsion system testing complete
10. Propulsion system performance uncertainty analysis complete
11. Avionics design and breadboard verification of software with hardware in the loop complete
12. Ground test demonstration of landing gear and braking systems

4.6 Phase III Flight Demonstration

In Phase III Flight Demonstration, the Offeror shall fabricate, assemble and test its Blackswift testbed in accordance with its Flight Test Plan. A systematic approach shall be followed with sufficient intermediate reviews to periodically assess progress toward flight demonstration. The Flight Test Plan shall include a critical path analysis (CPA) that addresses all major events associated with the development and verification of each element of the Blackswift testbed. This analysis shall include all key processes, developments or activities that will pace the development schedule. The CPA shall be developed in a program management tool to a level of detail sufficient to implement critical path analysis throughout Phase III. CPA status shall be reported at each milestone review.

Major elements leading up to the flight test campaign include the fabrication plan, interface control documentation, development of required range documentation, flight readiness review and the Flight Test Plan. The Offeror shall be responsible for identifying range facilities and availability as well as working with the range to ensure that all flight certification, safety and other requirements are met. Flight test shall be accomplished by a joint contractor and Government test team co-located at the flight test site.

4.6.1. Phase III Milestones

The following events are Government specified milestones which the Offeror shall allocate to payable Phase III milestones:

1. Flight Readiness Review
2. Mach 6+ Flight Test
3. Flight Test Out-brief
4. Phase III Final Report

The Offeror shall identify additional events which shall be assigned to payable milestones spaced at regular intervals throughout Phase III to the extent practical. The following are Government recommended events the Offeror should consider in compiling its Phase III milestones:

1. Quantitative Risk Assessment approved
2. Flight Test Plan approved
3. Range Safety Plan approved
4. Environmental Assessment approved
5. First flight testbed assembly complete
6. First testbed taxi (ready for flight)
7. First airborne flight
8. First supersonic flight
9. First hypersonic flight (Mn $\geq$ 5)
10. First flight Mn = 6 + sustained for 60 seconds
11. Maneuverability demonstration (aileron roll)

4.6.2. Flight Test Readiness

The Offeror shall demonstrate that all preparations have been completed and requirements have been met to initiate the Flight Test campaign in accordance with Appendix E.

4.6.3. Phase III Residual Flight Test Hardware Disposition

The Offeror shall make safe and deliver to a Government specified location any and all residual flight test hardware to the Government.

4.7 Milestone Reviews / Milestone Accomplishment Criteria

Milestone reviews shall be conducted approximately quarterly to review all technical and programmatic progress on the program, gauge performance, and conduct productive interchange with the Government team. To that end, quality technical information shall be provided discussing accomplishments and issues. A status of the schedule as well as financial data to include projections through the entire phase versus actual costs for each major WBS area shall be provided. In addition, schedule and financial data for each major subcontractor shall be presented in similar format. All presentation material shall be made available at the beginning of

the review. The final revision of the material shall be made available within two business days following the review.

The Offeror shall propose detailed milestone accomplishment criteria that sufficiently define measures of progress for each of the key areas at each milestone review.

5.0 PROPOSAL PREPARATION INSTRUCTIONS

This section provides the Offeror guidance for developing and presenting the Blackswift technical and cost proposals. The Offeror should carefully read and ensure that its proposal responds to the entire solicitation.

The Government is willing to award either a FAR-based contract or an OTA Agreement. The Offeror is asked to submit two cost proposals, one FAR Cost Accounting Standards (CAS) compliant proposal and one OTA compliant proposal. Offerors shall submit four (4) separate volumes. Volume 1 will be a FAR-based technical volume, Volume 2 will be the FAR-based management volume, Volume 3 will be a FAR-based cost proposal, and Volume 4 will be an OT-based "Delta Proposal". The "Delta Proposal" shall clearly identify changes to the proposed FAR-based technical, management and cost proposals (Volumes 1, 2 and 3 respectively) that result from use of the OTA. DARPA may award a FAR-based contract or an Other Transaction for Prototype (OTA) Agreement in accordance with Section 845 of the National Defense Authorization Act for Fiscal Year 1994 (10 U.S.C. 2371) as amended.

The Offeror shall use a program Work Breakdown Structure (WBS) with a common numbering system to integrate the technical volume, management volume, and cost volume and integrated master schedule (IMS). The Offeror's proposal shall include a Task Description Document (TDD), and an Integrated Master Schedule (IMS), and cost for each Phase of the program, and the proposed contract and agreement. Phase I shall be detailed to a WBS level 4 four. Phase II and III shall be detailed to a WBS level 3. The TDD and IMS will be inserted into the contract or agreement and form the basis for the program.

The Government's obligation under this solicitation and resulting contract or agreement award is dependent upon availability of appropriated funds. Offerors are advised that proposal preparation costs or any other cost incurred as a result of responding to this solicitation are incurred at the Offeror's risk.

5.1 Proposal Organization

The Offeror shall use the following outline in response to this solicitation. Maximum page counts are provided.

FAR-Based Technical Volume

Section I. Executive Summary	5 pages
Section II. Technical Summary	10 pages
Section III Concept Design and Development & Demonstration Approach	200 pages

FAR-Based Management Volume

Section IV Management	35 pages
Resumes	Unlimited
Proposed Contract and Agreement	Unlimited
Contract or Agreement Attachments	
Task Description Document	Unlimited
Integrated Master Plan	Unlimited
Integrated Master Schedule	Unlimited
Description of Payable Milestones	Unlimited
Work Breakdown Structure	Unlimited

FAR-Based Cost Volume

Section V Cost	Unlimited

OT-based Delta Cost Volume

Section VI – OT-Based "Delta Proposal"	Unlimited

5.1.1 Section I - Executive Summary

In this segment of the proposal the Offeror provides a top-level description of the key elements and unique features of its proposed Blackswift flight test program. At a minimum the overview shall include an overview of the proposed concept, an explanation of the technical approach, program management approach, and cost strategy used to execute the Blackswift flight test program.

5.1.2 Section II – Technical Summary

The Technical Summary is meant to be an executive summary of the complete system concept relying primarily on figures and tables. The main purpose is to provide a concise description that proposal evaluators can refer to while reading the rest of the proposal.

5.1.3 Section III – Concept Design and Development and Demonstration Approach

The Offeror should provide significant details to address all the relevant evaluation criteria outlined in Section 6.

5.1.3.1 Blackswift Testbed Concept Design

The Offeror shall describe its Blackswift testbed conceptual design and its traceability to the SRD provided in Appendix B. The Offeror shall describe the overall conceptual design, all major subsystems, the TBCC propulsion concept, and the flight mission profile. The Offeror should provide supporting data and/or analysis that demonstrates the proposed concept is at a

level of design fidelity to allow a first flight in 2012. The Offeror should clearly highlight the reusable, air-breathing hypersonic technologies demonstrated by the concept and their technology readiness levels at this time. The Offeror shall also clearly highlight any non-reusable (one flight life) features of the testbed concept.

5.1.3.2 Development and Demonstration Approach

The Offeror shall describe the development and demonstration plan to realize the design, development and demonstration of its Blackswift testbed flight test program. The Offeror shall describe its systems engineering process; its risk identification and risk reduction approach; and its ground and flight demonstration plan. The Offeror shall provide sufficient detail to permit correlation of the development and demonstration approach with the program development exit criteria detailed in Appendices C-E.

5.1.3.2.1 System Engineering and Risk Mitigation Approach

The Offeror's proposal shall identify and assess key technical challenges and risks associated with development of its testbed concept The Offeror shall describe its process and organization for arriving at a design that satisfies SRD (Appendix B), PDR (Appendix C), CDR (Appendix D) and demonstrates Flight Readiness (Appendix E) per the program schedule. The process shall describe how key systems knowledge acquired during the demonstration program will be captured, and describe the use of key tracking measures to enable efficient assessment of program progress.

The Offeror shall describe its approach to managing the technical risk identified in its proposal. The risk reduction approach should identify risk, quantify risk level, describe the type of risk reduction activity proposed, the engineering effort required in labor hours, and the contingent strategies to be used in the event the proposed risk reduction activities are unsuccessful. The approach shall cover known and anticipated risk through Phases I, II and III of the Blackswift flight test program.

Finally, the Offeror shall propose an uncertainty management approach to measure and track uncertainties in the TPMs as a minimum requirement.

5.1.3.2.2 Ground Test, Facilities and Analysis Approach

The Offeror shall describe its approach to technology component analysis and test in ground facilities through Phase I-III. Specifically, the Offeror shall identify a propulsion component and an integrated engine test strategy, using existing ground test facilities, that meet the intent of the SRD in Appendix B and the program exit criteria specified in Appendices C-E. The Offeror shall identify how analysis, specifically computational fluid dynamics (CFD), will be used to increase the fidelity of the design through Phase I-III. Finally, the Offeror shall identify required government-furnished facilities, manpower, additional facility improvements over existing facility capabilities, and equipment for each ground test in the Offeror's development and demonstration approach.

5.1.3.2.3 Flight Demonstration Approach

The Offeror shall describe its approach to accomplish the Blackswift flight demonstration and meets or exceeds program objectives as specified by the SRD. This description shall include key testbed ground demonstrations performed during Phases II and III prior to actual flight demonstrations. The description will include role of the Offeror and expected tasks of the responsible test organization (e.g., ground and airspace approvals, certifications), the number ground and flight tests anticipated and a schedule of Phase II and III management actions required to ensure timely execution of the Blackswift flight demonstration. The Offeror's proposal shall identify a flight test range and address safety coordination issues

5.1.3.3 Program Go/No Go Criteria Approach

Offerors shall cite the quantitative and qualitative proposed efforts to meet the Go/No Go criteria and shall address the extent to which its approach satisfies the Go/No Go criteria for each Phase of the program as defined in Appendices C-E.

5.1.4 Section IV – Management

The Offeror should provide significant details to address all the relevant evaluation criteria outlined in Section 6.

5.1.4.1 Management Process/Tools

The Offeror shall describe its program management process, including a description of business practices that will support accomplishment of the programmatic and technical goals for each program Phase. The Offeror shall describe its management approach to subcontractors and identify how this approach will insure a successful development and demonstration of the Blackswift testbed.

The Offeror shall explain tracking tools to be used in the Blackswift flight test program and how they will be updated on a monthly basis. At a minimum, these tools shall include:

- IMS: The Offeror will establish and maintain a master scheduling system that provides continuous status of program accomplishments against time. This tiered system will provide visibility to Level 3 and Level 4 items of its WBS as appropriate.
- Earned Value Management System (EVMS): The Offeror will provide a financial management system that is tied to their WBS. In addition to monthly deliverables, the government would like to have real time visibility into the program budget and spend plan and IMS through on-line access. These tools shall be the same tools used internally to manage the program. No additional unique information for the government is desired or required.

The Offeror's proposal shall allocate its proposed budget in accordance to its WBS and demonstrate that this allocation is commensurate with the proposed technical effort. The Offeror shall propose appropriate milestone products, allocate them to specific milestone events

occurring approximately quarterly and define accomplishment criteria for each product. The Offeror shall assign a payment it proposes to receive for each milestone event and allocate this payment value amount among the milestone products associated with the particular milestone event. Milestone products, accomplishment criteria and associated payment amounts will be subject to adjustment as part of the contract or agreement negotiation process.

5.1.4.2 Key Personnel/Team/Staffing

The Offeror shall delineate its organizational structure for its proposed program including identification of key management and technical areas, roles and responsibilities, and functional inter-relationships

The Offeror shall identify key personnel such as the Program Manager, Deputy Program Manager, Chief Engineer, System Engineer/Architect, and Integrated Product Team/Functional Leads. These Key personnel should be the leaders of the program team and represent the program team's capability and strength. They may be from a single company or distributed across various companies that compose the overall program team. The Offeror shall also identify the number of hours committed for each of these key personnel. The Government wishes to understand the strength of the team through its acknowledged leaders and their qualifications. Resumes shall be provided for all key personnel.

The Offeror will describe the proposed program team and its breadth and depth of expertise in like or similar programs. Offeror will describe the team's ability and experience that qualify it to execute the program from preliminary design through testing, including the demonstrated ability to produce systems of this complexity. The Offeror shall describe the proposed management construct.

5.1.4.3 Corporate Commitment/Capabilities/Facilities

The Offeror shall describe its corporate commitment and unique capabilities to fully support all aspects of the proposed program. The Offeror shall describe how its team will be expanded to support the increased staffing needs and how separate team element activities will be managed and integrated geographically and/or organizationally.

The Offeror shall discuss its ability to execute technically challenging programs on time and within budget as demonstrated by its performance on past programs.

The Offeror shall describe innovative business practices to be used on this program that provide the potential for cost or schedule benefit as compared to a traditional acquisition program.

The Offeror shall demonstrate that it possesses adequate facilities including appropriate site security clearances and sufficient computing resources to support its proposed program.

The Offeror shall identify facilities needed to support the Blackswift flight test program and explain how they will obtain access to the facilities.

5.1.4.4 Proposed Contract and Agreement with Attachments

The Offeror shall submit a proposed contract and agreement including the attachments described below.

5.1.4.4.1 Attachment 1: Task Description Document (TDD)

The TDD describes the work effort necessary to meet the milestones and program objectives and criteria. The TDD shall include the Offeror's plans for technology development, integration, and test. The Offeror may choose to define work at lower levels to better explain their approach. Offerors should identify the backup plans for critical tasks. If a backup plan is exercised, the Offeror will need to evaluate the impact of this change on the project goals.

5.1.4.4.2 Attachment 2: Integrated Master Plan

The Offeror shall develop and provide to the Government an Integrated Management Plan (IMP) that describes the processes it will employ and products it will develop in execution of its proposed program. The IMP shall describe the technical, management, systems engineering and businesses processes the Offeror plans to apply. It shall also address specification, verification and significant management accomplishments necessary to complete the requirements analysis, design development and risk reduction activities. The IMP shall delineate the milestone events including milestone products associated with each event and their accomplishment criteria.

5.1.4.4.3 Attachment 3: Integrated Master Schedule (IMS)

The IMS should outline the detailed tasks and the amount of time expressed in calendar schedules necessary to achieve the milestones and significant functional accomplishments all program Phases. It is a tiered scheduling system corresponding to the Blackswift Work Breakdown Structure with resource allocation to the appropriate level. The first iteration of the MS should be to Level 4 of the Offeror's TDD or lower as determined by the Offeror. Highlight the critical paths from both a schedule and technical perspective. Definitions and characteristics of the key elements of the IMS are given below.

Detailed Tasks: Detailed work effort to be completed in support of a specific significant milestone or functional accomplishment.

Calendar Schedule: Detailed schedule (dates) of the period of performance for each work effort.

5.1.4.4.4 Attachment 4: Description of Payable Milestones

If the Offeror wants to tailor the suggested milestones provided in Section 4.4, a description, expansion and tailoring of the milestones with the rationale for changes should be submitted**.**

The Offeror shall include proposed payable milestones and contract/agreement approach beyond Phase I in addition to the information required in the draft contract/agreement attached in Appendix A.

5.1.4.4.5 Attachment 5: Work Breakdown Structure

The Offeror shall submit a Work Breakdown Structure (WBS) as Attachment 5 of its proposal. The WBS shall provide a common numbering system that ties all program elements together. This numbering system shall integrate the IMP, IMS and TDD and must be used throughout all program documentation. The IMP, IMS and TDD shall be consistent down through level 4 of the WBS.

5.1.5 Section V – Cost Volume

The cost volume shall include a description of the Offeror's approach for resource allocation to support the task outline in the Integrated Master Plan (IMP); for accomplishing the program's integrated baseline review; its implementation of earned value management; its program control approach to include method, content and frequency of cost performance reporting; and its approach for conducting variance analyses, developing corrective action plans, and assessing the impact to estimates to complete. The Offeror should also include in its proposed price identification and cost of any government range or other facilities and all GFE required during the proposed program.

Cost Summary

The lead page of the Cost section shall have a Cost Summary Sheet, including all the information shown in Table 1, as applicable. It shall be a one-page summary of program costs in tabular format. The Prime Offeror/team lead, team members, funding to federal laboratories and agencies, and cost of major facility utilization (such as wind tunnels, flight test facilities, etc.) shall all be addressed as applicable. The Summary Sheet shall only contain summary data; the lower-level detail can be addressed as part of the other recommended breakouts discussed in these instructions. The second page of the cost response should include a summary table that includes the base program and prioritized options (if proposed) with associated costs for each. Each prioritized option should be associated with a unique Work Breakdown Structure number so that they can clearly be tracked throughout the cost response.

Table 1. Cost Summary Sheet

Phase II	
PoP: Start xx/xx/xx to End xx/xx/xx	
Prime Contractor Labor	
Labor Hours	
Total Labor $ *	
Prime Contractor Direct Materials	
Direct Material $ *	
Major Subcontractors / Team Members	
Team Member A	
Labor Hrs	
Total Labor $ *	
Direct Material $ *	
Other Direct Costs (ODC) *	
Total Team Member A $	
(Repeat above for Other Team Members)	
Other Direct Costs (ODC)	
Travel $	
Lab/Test Facilities Usage $ (if not GFE/GFI)	
Purchased Services / Consultants	
Other $	
Government Furnished Equipment / Information (GFE/GFI)	
Item 1: …Description of & Date Needed	
Item 2: …Description & Date Needed	
(Repeat for additional GFE/GFI Items)	
Total Proposed Costs	
* Fully Loaded (All Direct, Indirect and Fees included)	

General Instructions

The Cost Response shall include a complete summary of all costs by WBS by month as highlighted in Table 2. The Offeror should use the same Work Breakdown Structure as in the TDD and IMS. The desired cost information shall be provided for all team members. Cost information shall be provided down to WBS level 4.

Certified cost or pricing data is required for any result FAR-based contract. In order for the government to assess program risk and determine the reasonableness, realism, and completeness of the cost proposal, the data regarding labor, direct materials, major subcontracts / team members, other direct costs (ODC), and government furnished equipment or information

(GFE/GFI) must be provided for each team member and in a cumulative summary. Each item and category must be broken out. The costs shown in the various breakouts and discussed in the following sections should equal those summarized in Table 1.

Table 2. Phase II Monthly Summary

	Month 1	Month 2	…….	Month N	Total $
WBS x.					
WBS x.x					
WBS x.x.x					
WBS x.x.x.x					
……					
……					
……					
Total $					
Cumulative $					

Labor

Total labor includes direct labor and all indirect expenses associated with labor for each program Phase. Labor hours and costs shall be allocated to each WBS element contained in the TDD and segmented by team member. Table 3 provides an example of this breakout. Table 4 shows a breakdown of labor hours and rates for each category of personnel to be used on this project.

Table 3. Labor Summary

	Prime Contractor	Team Member A	Team Member B	…….	Total
WBS x.					
WBS x.x					
WBS x.x.x					
WBS x.x.x .x					
……					
……					
……					
Total					

Table 4. Labor Rate Summary

	FY04	FY05	FY06	FY07	FY08
	Hrs / Rate	Hrs / Rate	Hrs / Rate	Hrs / Rate	Hrs / Rate
Prime Contractor					
Labor Category 1					
Labor Category 2					
Labor Category 3*					
Team Member A**					
Labor Category 1					
Labor Category 2					
Labor Category 3*					
* Repeat for other Labor Categories as needed ** Repeat for other Subcontractors/Team Members as needed					

Direct Materials

Total direct material includes that which will be acquired and/or consumed in each Phase. List only major items of material (>$100,000). As Table 5 illustrates, material costs shall be assigned to specific WBS elements as described in the TDD.

Table 5. Material Summary

	Description	Prime Contractor	Team Member A	Team Member B	…….	Total
WBS x.						
WBS x.x						
WBS x.x.x						
WBS x.x.x.x ……						
……						
……						
……						
Total						

Subcontracts

List efforts to be subcontracted, the source, estimated cost and the basis for this estimate. Major subcontractors and team members are defined as total effort for each Phase that is greater than

$100,000. Table 6 provides an example of a cost breakout. As with the Prime Contractor, break out the subcontract costs by labor (amount and hours), material, and other direct charges.

Table 6. Major Subcontractor Summary *

	Labor Hours	Labor $	Material $	ODC $	……	Total $
WBS x.						
WBS x.x						
WBS x.x.x						
WBS x.x.x.x ……						
……						
……						
……						
Total						
* Provide a Separate Table for each Major Subcontractor / Team Member by Phase.						

Other Direct Costs (ODCs)

This section contains any direct costs not included above. As shown in Table 7, ODCs shall be broken out by categories, such as travel, facility costs, purchases services, and consultants. Major facility requirements such as wind tunnel testing or flight research vehicles, government or commercial shall all be included, as should estimates of total facility occupancy and test time. Offerors are expected to include the costs of using any government testing facilities in their cost proposals, but they can use government rates instead of industry rates. At its discretion, DARPA may choose to directly procure services from government test facilities.

Table 7. ODC Summary

	Description	Travel $	Purchased Services $	Facilities Usage $	Other $	……	Total $
WBS x.							
WBS x.x							
WBS x.x.x							
WBS x.x.x.x ……							
……							
……							
……							
Total							

Government Furnished Equipment or Information

As Table 8 highlights, the Offeror shall explicitly list all assumed GFE and GFI and the assumed delivery schedule for both. List only major items of GFE/GFI (>$25,000) separately; however, the total for all GFE/GFI shall be included in Table 8. This information should be in sufficient detail for the government to assess the realism and costs of providing such information or equipment.

Table 8. GFE/GFI Summary

	GFE Description	Source	Date Needed	Total $
WBS x.				
WBS x.x				
WBS x.x.x				
WBS x.x.x.x ……				
……				
……				
……				
Total				

For the OT proposal, the contractor shall provide a total estimated price for the major cost-share activities associated with the program. The Offeror shall clearly state whether these investments are to be included within the resultant agreement.

Table 9 illustrates the breakout for any proposed company investments associated with the agreement.

Table 9. Company Investments

	Cash $	IRAD $	Other $	Total $
WBS x.				
WBS x.x				
WBS x.x.x				
WBS x.x.x.x ……				
……				
……				
……				
Total				

In addition the Offeror is required to provide costs and labor hours to level four of its WBS. The following table is a notional spreadsheet which identifies the level of pricing detail the Government desires.

WBS Level 1000	Labor Hours	Labor Dollars	Direct Material Dollars	Subcontract /Consultant Dollars	Travel Dollars	Other Dollars	Total Dollars
1100							
1110							
1120							
1130							
1140							

5.1.6 Section VI – OT-Based "Delta Proposal"

Section I through V shall be proposed as a FAR-based proposal. Section VI shall be submitted as an OT-based "Delta Proposal". The "Delta Proposal" shall clearly identify changes to the proposed FAR-based technical and cost proposals that result from use of the OTA. The Offeror shall clearly and fully address each of the specified topic areas within the identified sections of each volume.

5.2 Other Information and Administrative Instructions

5.2.1 Proposal Format and Submission Requirement

The Solicitation Response should be submitted in standard three-ring, loose leaf binders with individual pages unbound and printed single-sided to facilitate page changes. The response shall not exceed page count contain in 5.1. Page count will be based on the Offeror's hardcopy submission. Indexes, cross reference tables, and tabs will not be included in the page count. The proposed agreement with attachments will not be included in the page count.

Authorized representatives of the Offeror must sign proposal volumes.

Each page should be printed on an 8-1/2" x 11" sheet using Times New Roman 12-point font. Graphics should not include text in smaller than 8-point font. Fold out pages will be counted as multiple pages. Pages should be marked SOURCE SELECTION SENSITIVE.

Offerors are required to submit two copies of their proposal in Microsoft Office 2003-compatible electronic format on CD-ROM as well as six paper copies. Documents containing imported graphics (drawings, charts, photos, etc.) should be accompanied by the originally imported graphics files. The term "import" refers to incorporating file of one type into a document that is of another type (e.g., incorporating a Microsoft PowerPoint file into a Microsoft Word document.) All responses must be received on or before 14 APRIL 2008, at 4:00 PM Eastern Daylight Time. Late responses will not be accepted.

Proposals not meeting the format described may not be reviewed.

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. Upon completion of

the source selection process, the original of each proposal received will be retained at DARPA and all other copies will be destroyed. A certification of destruction may be requested, provided that the formal request is received at this office within 5 days after unsuccessful notification.

5.2.2 Proposal Due Date and Delivery

The proposal due date is 14 APRIL 2008, at 4:00 PM Eastern Daylight Time.

5.2.2.1 Unclassified Information

The unclassified portion of the Offeror's proposal shall be mailed or hand carried to:

Defense Advanced Research Projects Agency (DARPA)
Blackswift Program
3701 North Fairfax Drive
Arlington, VA 22203-1714
Attn: Contracts Management Office/Robin Swatloski
Program Solicitation Number: 08-02

Responses and response modifications (which will only be accepted prior to the deadline for receipt of response) shall be submitted in sealed envelopes or packages to the address shown above and marked with the following information on the outer wrapping:

Offeror's name and return address
The response receipt address above
Solicitation Number: Program Solicitation PS08-02
Hour and due date: 14 APRIL 2008, at 4:00 PM Eastern Daylight Time

5.2.2.2 Classified Information

Classified versions of proposals shall be submitted through the DARPA Blackswift Program Security Manager using the appropriate procedures. Advance planning is recommended to ensure availability of DARPA security personnel to receive proposal material.

Defense Advanced Research Projects Agency (DARPA)
Blackswift Program
3701 North Fairfax Drive
Arlington, VA 22203-1714
Attn: Security and Intelligence Directorate (SID)/Paul McLean
Contact Info: 703-526-6708/Paul.McLean@darpa.mil
Program Solicitation Number: 08-02

5.2.3 Security

In the event that an Offeror chooses to submit a classified proposal or submit any documentation that may be classified, the following information is applicable.

Offerors choosing to submit a classified proposal must first receive permission from the Original Classification Authority to use their information in replying to this solicitation. Applicable classification guide(s) should be submitted to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

Collateral Classified Information: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may only be mailed via U.S. Postal Service (USPS) Registered Mail or U.S. Postal Service Express Mail. All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be addressed to:

Defense Advanced Research Projects Agency
ATTN: TTO
Reference: PS08-02
3701 North Fairfax Drive
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security & Intelligence Directorate, Attn: CDR
3701 North Fairfax Drive
Arlington, VA 22203-1714

All Top Secret materials should be hand carried via an authorized, two-person courier team to the DARPA CDR.

Special Access Program (SAP) Information: Contact the DARPA Special Access Program Central Office (SAPCO) 703-526-4052 for further guidance and instructions prior to transmitting SAP information to DARPA. Top Secret SAP, must be transmitted via approved methods for such material. Consult the DoD Overprint to the National Industrial Security Program Operating Manual for further guidance. Prior to transmitting SAP material, it is strongly recommended that you coordinate your submission with the DARPA SAPCO.

Sensitive Compartmented Information (SCI) Data: Contact the DARPA Special Security Office (SSO) at 703-812-1994/1984 for the correct SCI courier address and instructions. All SCI should be transmitted through your servicing Special Security Officer (SSO). SCI data must be transmitted through SCI channels only (i.e., approved SCI Facility to SCI facility via secure fax).

Proprietary Data: All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Offeror's responsibility to clearly define to the Government what is considered proprietary data.

Offerors must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level required.

5.2.4 Administrative Address

DARPA intends to use fax and electronic mail for some of the correspondence regarding solicitation PS08-02. Proposals must NOT be sent by fax or email; any proposals sent by fax or email will be disregarded.

The administrative addresses for this solicitation are:

Administrative, technical or contractual questions should be sent via e-mail to PS08-02@darpa.mil. All requests must include the name, email address, and phone number of a point of contact.

Defense Advanced Research Projects Agency (DARPA)
Blackswift Program
3701 North Fairfax Drive
Arlington, VA 22203-1714
Attn: Contracts Management Office/Robin Swatloski
Program Solicitation Number: 08-02

5.2.5 Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (including, but not limited to, Title 18, Section 207, United States Code, the Procurement Integrity Act, 41 U.S.C. 423, and FAR 3.104.) Current federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 USC 203, 205, and 208.). The DARPA Program Manager for this solicitation is Dr. Steve Walker. As of the date of first publication of the solicitation, the Government has not identified any potential conflicts of interest involving this program manager. Once the proposals have been received, and prior to the start of proposal evaluations, the Government will assess potential conflicts of interest and will promptly notify the Offeror if any appear to exist. (Please note the Government assessment does NOT affect, offset, or mitigate the Offeror's own duty to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.) The Program Manager is required to review and evaluate all proposals received under this solicitation and to manage all selected efforts. Offerors should carefully consider the composition of their performer team before submitting a proposal to this solicitation.

All Offerors and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the Offeror supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the Offeror has taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval or a waiver from the DARPA Director, a Contractor cannot simultaneously be a SETA and Performer. Proposals that fail to fully disclose potential conflicts of interests and/or do not have plans to mitigate this conflict will be returned without technical evaluation and withdrawn from further consideration for award.

If a prospective Offeror believes that any conflict of interest exists or may exist (whether organizational or otherwise), the Offeror should promptly raise the issue with DARPA by sending Offeror's contact information and a summary of the potential conflict by email to the mailbox address for this solicitation at PS08-02@darpa.mil, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively mitigated, the proposal may be returned without technical evaluation and withdrawn from further consideration for award under this solicitation.

5.2.6 Rules of Communication

All discussions with the Blackswift Government Team regarding the solicitation, proposals or any other issue relating to source selection can only be in the form of questions through the Contracting Officer and the Program Manager.

The Contractor is advised that employees of support contractors may be called upon as subject matter experts in the evaluation process. These individuals will be required to sign non-disclosure statements and will be authorized access to only those portions of the proposal data and discussions that are necessary to enable them to perform their respective duties. Such firms are expressly prohibited from competing on the subject acquisition and from proposal scoring, ranking or recommending the selection of a source. By submission of a proposal, the Contractor agrees that proposal information may be disclosed to these selected individuals for the limited purpose stated above. Any information not intended for limited release to these individuals must be clearly marked and submitted segregated from other proposal material with accompanying rationale and identification of specific companies and/or individuals to be excluded.

5.2.7 Award Information

A single award is anticipated. The amount of resources made available under this solicitation will depend on the quality of the proposals received and the availability of funds. The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation. The Government also reserves the right to conduct discussions if the Source Selection Authority finds it necessary. If warranted, portions of

resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that Offeror. If the proposed effort is inherently divisible and nothing is gained from the aggregation, Offerors should consider submitting it as multiple independent efforts. The Government reserves the right to fund proposals in phases with options for continued work at the end of one or more of the phases.

Awards under this program solicitation will be made to Offerors on the basis of the evaluation criteria listed in Section 6.0 and program balance to provide overall value to the Government. Proposals identified for negotiation may result in a procurement contract or other transaction agreement depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

5.2.8 Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of research and development in the Blackswift flight test program.

Independent proposals from Government/National laboratories may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per P.L. 103-337§ 217 and P.L 105-261 § 3136. Offerors from Government/ National Laboratories must provide documentation to DARPA to establish that they are eligible to propose and have unique capabilities not otherwise available in private industry.

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Requlations, Export Control Laws, and other governing statutes applicable under the circumstances.

Collaborative efforts/teaming are encouraged. Specific content, communications, networking, and team formation are the sole responsibility of the participants.

5.2.9 Cost Sharing/Matching

Cost sharing may be required where there is an applicable statutory condition relating to the selected funding instrument (e.g., for any Other Transactions under the authority of 10 U.S.C. § 2371). Cost sharing is encouraged and will be carefully considered where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

5.2.10 Program Solicitation

This solicitation contains all information required to submit a proposal. No additional forms, kits, or other materials are needed. This solicitation constitutes the total PS08-02. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

5.2.11 Other Transactions for Prototypes

All Offerors requesting an 845 Other Transaction Agreement for Prototypes (OTA) must include a detailed list of payment milestones. Each such payment milestone must include the following: milestone description, exit criteria, due date, milestone payment amount (to include, if cost share is proposed, contractor and government share amounts). It is noted that, at a minimum, such payable milestones should relate directly to accomplishment of program technical go/no-go criteria as defined in the solicitation and/or the Offeror's proposal. Agreement type, fixed price payable milestone, will be subject to negotiation by the Agreements Officer. If the Offeror requests award of an 845 OTA as a nontraditional defense contractor, as so defined in the OSD guide entitled "Other Transactions (OT) Guide For Prototype Projects" dtd January 2001 (as amended)(http://www.dau.mil/pubs/Online_Pubs.asp), information must be included in the cost proposal to support the claim. Additionally, if the Offeror plans requests award of an 845 OTA, without the required one-third (1/3) cost share, information must be included in the cost proposal supporting that there is at least one non-traditional defense contractor participating to a significant extent in the proposed prototype project.

5.2.12 Award Process

After selection and before award, the contracting officer will negotiate cost/price reasonableness.

Award(s) will be made to Offerors whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort. Award(s) may be made to any Offeror(s) whose proposal(s) is determined selectable regardless of its overall rating.

NOTE: OFFERORS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

5.2.13 Award Notices

As soon as the evaluation of a proposal is complete, the Offeror will be notified that 1) the proposal has been selected for funding pending contract or agreement negotiations, or 2) the proposal has not been selected. These official notifications will be sent via Electronic Mail to the Technical POC identified on the proposal coversheet.

5.2.14 Intellectual Property

5.2.14.1 Procurement Contract Offerors - Noncommercial Items (Technical Data and Computer Software)

Offerors responding to this solicitation requesting a procurement contract to be issued under the FAR/DFARS shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Offerors shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that Offerors do not submit the list, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then Offerors should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire "unlimited rights" unless the parties agree otherwise. Offerors are admonished that the Government will use the list during the source selection evaluation process to evaluate the impact of any identified restrictions and may request additional information from the Offeror, as may be necessary, to evaluate the Offeror's assertions. If no restrictions are intended, then the Offeror should state "NONE."

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

5.2.14.2 Procurement Contract Offerors - Commercial Items (Technical Data and Computer Software)

Offerors responding to this requesting a procurement contract to be issued under the FAR/DFARS shall identify all commercial technical data and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that Offerors do not submit the list, the Government will assume that there are no restrictions on the Government's use of

such commercial items. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions and may request additional information from the Offeror, as may be necessary, to evaluate the Offeror's assertions. If no restrictions are intended, then the Offeror should state "NONE."

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

5.2.14.3 Non-Procurement Contract Offerors – Noncommercial and Commercial Items (Technical Data and Computer Software)

Offerors responding to this solicitation requesting an Other Transaction for Prototype shall follow the applicable rules and regulations governing this award instrument, but in all cases should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, Offerors may use a format similar to that described in the above paragraphs. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the Offeror, as may be necessary, to evaluate the Offeror's assertions. If no restrictions are intended, then the Offeror should state "NONE."

5.2.15 All Offerors – Patents

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

5.2.16 All Offerors – Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, Offerors shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

5.2.17 Human Use

Proposals selected for contract or agreement award are required to comply with provisions of the Common Rule (32 CFR 219) on the protection of human subjects in research (http://www.dtic.mil/biosys/downloads/32cfr219.pdf) and the Department of Defense Directive 3216.2 (http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm). All proposals that involve the use of human subjects are required to include documentation of their ability to follow Federal guidelines for the protection of human subjects. This includes, but is not limited to, protocol approval mechanisms, approved Institutional Review Boards, and Federal Wide Assurances. These requirements are based on expected human use issues sometime during the entire length of the proposed effort.

For proposals involving "greater than minimal risk" to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB at the time of final proposal submission to DARPA. For proposals that are forecasted to involve "greater than minimal risk" after the first year, a discussion on how and when the Offeror will comply with submission to a federally approved IRB needs to be provided in the submission. More information on applicable federal regulations can be found at the Department of Health and Human Services – Office of Human Research Protections website (http://www.dhhs.gov/ohrp/). Any aspects of a proposal involving human use should be specifically called out as a separate element of the statement of work and cost proposal to allow for independent review and approval of those elements.

5.2.18 Animal Use

Any Recipient performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Act of 1966, as amended, (7 U.S.C. 2131-2159); (ii) the guidelines described in National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; (iii) DoD Directive 3216.01, "Use of Laboratory Animals in DoD Program."

For submissions containing animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the PHS Policy on Humane Care and Use of Laboratory Animals, available at http://grants.nih.gov/grants/olaw/olaw.htm.

All Recipients must receive approval by a DoD certified veterinarian, in addition to an IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the USAMRMC Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the Recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc.amedd.army.mil/AnimalAppendix.asp

5.2.19 Publication Approval

The following provision will be incorporated into any resultant procurement contract or agreement:

When submitting material for written approval for open publication, the Contractor/Awardee must submit a request for public release to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to tio@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.

Export Control

(1) The Contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract or agreement. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(2) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract or agreement, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technologies, including technical data or software.

(3) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(4) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

5.2.20 Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime

contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each Offeror who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

5.2.21 Reporting

The number and types of reports will be specified in the award document, but will include as a minimum monthly/quarterly financial status reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle.

5.2.22 Central Contractor Registration (CCR)

Selected Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to any award under this solicitation. Information on CCR registration is available at http://www.ccr.gov.

5.2.23 Representations and Certifications

In accordance with FAR 4.1201, prospective Offerors shall complete electronic annual representations and certifications at http://orca.bpn.gov.

5.2.24 Wide Area Work Flow (WAWF) (FAR-based contracts only)

Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWF at http://wawf.eb.mil. Registration to WAWF will be required prior to any award under this solicitation.

5.2.25 Regulations Governing Objections to Solicitation and Award

Any objections to the terms of this solicitation or to the conduct of receipt, evaluation or award of agreements must be presented in writing within ten calendar days of (1) the release of this solicitation or (2) the date the objector knows or should have known the basis for its objection. Objections must be provided in letter format, clearly stating that it is an objection to this solicitation or to the conduct of evaluation or award of an agreement, and providing a clearly detailed factual statement of the basis for objection. Failure to comply with these directions is a basis for summary dismissal of the objection. Mail objections to the address listed in the proposal delivery information.

5.2.26 Requesting Technical Material

Program documentation consisting of technical material from Falcon and other related programs can only be released to qualified offerors. In order to qualify, offerors must have a facility clearance from Defense Security Service (DSS) at any level. Program documentation can be obtained through a written request to PS08-02@darpa.mil and should use "Program Documentation" as the subject line when submitting the request. Technical material (documents and media) received under this solicitation is designated as "**Controlled Unclassified Information" (CUI)** and is **export-controlled**. **Disclosure to any foreign person would constitute an export, and this therefore prohibited.** The information received may not be used, modified, reproduced, released, displayed or disclosed to other offerors or to the public. Each subcontractor or other team member desiring the program documentation for use in proposal preparation must directly request it from DARPA. Offerors are responsible for safeguarding and protecting DARPA CUI at all times. During this solicitation phase, offerors must ensure that a system of general safeguarding requirements is implemented that includes security checks to ensure program documentation is properly secured and perimeter controls that will deter and quickly detect unauthorized entry or removal from the facility. Specific handling instructions for the program documentation are:

- The program documentation shall be handled in a manner that provides reasonable assurance that unauthorized persons do not gain access.
- During working hours, reasonable steps should be taken to minimize risk of access by unauthorized personnel not involved with the solicitation process.
- After working hours, the program documentation shall be stored in locked containers, desks or cabinets.
- No program documentation shall be posted on internal or external computer systems unless they are so configured as to guarantee access to the information only to individuals authorized to access it.
- The program documentation shall not be destroyed but immediately returned to DARPA at the termination of the solicitation phase, or removed from computer systems and so certified to DARPA.

In addition to export controlled, some program documentation is data delivered under Government contracts/agreements in which the Government has rights and obligations to data produced, furnished, acquired or specifically used in meeting contract performance requirements. Each contract/agreement contains terms that delineate the respective rights and obligations of the Government that will flow-down to offerors regarding the use, duplication, and disclosure of such data.

Offerors will be required to sign a certification agreeing to applicable export control restrictions and handling of data, including agreement to respect specifically identified rights and obligations applicable to each document in the program documentation.

6.0 EVALUATION CRITERIA FOR AWARD

The primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and funds availability. The Government reserves the right to make a single award, multiple awards, or no award.

Proposal responses shall consider the entire solicitation. Selection will be based on the credible technical, management and cost proposals which represent best overall value to the government, including a balanced approach to program execution, program approach and risk. Evaluation factors are listed below and described in the following sections.

There are five factors that will be rated during the evaluation. The first three factors are technical in nature and are given equal weighting. They are the Blackswift Testbed Concept Design, the Development and Demonstration Approach and the Program Go/No Go Criteria Approach. Management, Key Personnel, Corporate Commitment/Capabilities, and Contract/Agreement Terms and Conditions are combined into a single factor referred to as Management and this factor has less relative weight than each of the technical factors. Cost of the Offeror's proposed effort is the fifth factor and is of lesser importance than the Management factor.

Several of these factors have some subfactors. An unsatisfactory rating in any one of the Design and Demonstration Approach and Program Go/No Go Criteria Approach subfactors would be considered a significant deficiency and reduce the respective factor rating accordingly. The following factors/subfactors will be used for evaluation purposes.

FACTORS:

1. Blackswift Testbed Concept Design
2. Design Development and Demonstration Approach
3. Program Go/No Go Criteria Approach
4. Management
5. Cost

6.1 Blackswift Testbed Concept Design

The Offeror's Concept Design will be evaluated with respect to the extent to which the applicable criteria are satisfied:

- Meets or exceeds all requirements as specified by the SRD provided in Appendix B.
- Meets the intent of a reusable air-breathing hypersonic testbed to demonstrate technologies for a future reusable hypersonic cruise vehicle
- Adequately supported by analysis and/or experimental data to substantiate design fidelity.
- Can be realized within program schedule expectations (first flight – 2012)

6.2 Design Development and Demonstration Plan

The following subfactor areas will be evaluated:

Systems Engineering and Risk Mitigation Approach

- Utilizes a rational and executable systems engineering approach
- Identifies and assesses key technical challenges and risks
- Delineates a comprehensive risk reduction approach that is consistent with technical realities and program schedule
- Identifies a measurement of uncertainty strategy consistent with an aggressive technology development and demonstration flight test program

Ground Test, Facilities, and Analysis Approach

- Provides substantive ground test and analysis approach to reduce the risk in key areas such as TBCC propulsion, thermal management, hypersonic aerodynamics and guidance and control.
- Identifies a propulsion ground testing approach that is consistent with current hypersonic test facilities.
- Identifies government furnished equipment, facilities, manpower, and any required modifications to government-owned facilities for each test campaign, if needed.

Flight Test Approach

- Identifies steps to conducting a flight demonstration that meets or exceeds program objectives
- Is credible with regard to achieving a successful flight demonstration within program schedule constraints and consistent with the SRD in Appendix B.
- Identifies a flight test range and addresses range safety coordination issues

6.3 Program Go/No Go Criteria Approach

The Offeror will be evaluated to the extent in which its approach satisfies the go/no go milestones for each Phase of the program.

- Decision gates for program continuation are to occur at the end of Phase I (PDR Exit Criteria in Appendix C), Phase II (CDR Exit Criteria in Appendix D) and prior to the beginning of the flight test program in Phase III (Flight Readiness Review (FRR) Exit Criteria in Appendix E).
- Work Breakdown Structure (TDD, IMP, IMS) is consistent with program go/no go criteria described in Appendices C-E.

6.4 Management

The following subfactor areas will be evaluated:

Management Process/Tools

Extent to which Offeror has:

- proposed use of appropriate management tools (e.g. WBS, IMP, IMS, TDD, EVMS) process for subcontractor and vendor management
- identified appropriate milestone products and defined accomplishment criteria
- proposed budget allocations in support of the proposed technical effort

Key Personnel/Team/Staffing

Extent to which:

- organizational structure is logical, identifies relevant functional areas, and defines roles and responsibilities
- key management leads have experience in managing complex air vehicle development and demonstration programs
- key technical leads have experience and technical expertise in reusable air-breathing hypersonic propulsion and vehicle design
- relevant experience and past performance of individuals on team are adequate and provide confidence that the proposed effort will be executed within cost and schedule

Corporate Commitment/Capabilities/Facilities

Extent to which:

- companies and other entities comprising the Offeror's team possess relevant experience and facilities to support design, development and flight test of complex air vehicles.
- facility resource requirements identified and sufficiently dedicated to the program including secure (DD254-cleared) facilities and computing resources
- companies and other entities comprising the Offeror's team have demonstrated the ability to execute past technically challenging programs on time and within budget

Contract/Agreement Terms and Conditions

Extent to which:

- the terms and conditions of the proposed contract and agreement are in the best interest of the Government and intellectual property rights limitations depart from the solicitation.

- the TDD and all attachments reflects all Phase I, II and II activities and the payable milestone schedule is consistent with Government guidance

6.5 Cost

This evaluation factor will focus on the cost realism and completeness of the proposed program in achieving the program objectives for all Phases.

7.0 ACRONYMS

3DOF	Three Degree of Freedom
AFB	Air Force Base
CDR	Critical Design Review
CFD	Computational Fluid Dynamics
CPA	Critical Path Analysis
DARPA	Defense Advanced Projects Agency
DoD	Department of Defense
DPM	Deputy Program Manager
ETC	Estimate to Complete
EV	Earned Value
EVM	Earned Value Management
EVMS	Earned Value Management System
FAR	Federal Acquisition Regulations
FRR	Flight Readiness Review
FTP	Flight Test Plan
GFE	Government Furnished Equipment
GFF	Government Furnished Facility
GFP	Government Furnished Property
GRX	Government Furnished (other)
GPR	Government Purpose Rights
HTV	Hypersonic Test Vehicle
ICD	Interface Control Document
IMP	Integrated Management Plan
IMS	Integrated Management Schedule
IPT	Integrated Product Team
IR&D	Independent Research and Development
ISR	Intelligence, Surveillance, and Reconnaissance
Mn	Mach Number
OTA	Other Transaction Authority
PDR	Preliminary Design Review
PM	Program Manager
RMP	Risk Management Plan
ROM	Rough Order of Magnitude
SOO	Statement of Objectives
SRD	System Requirements Document
SRR	System Requirements Review
TBCC	Turbine Based Combined Cycle
TDD	Task Description Document
TMP	Technology Maturation Plan
TPM	Technical Performance Measure
WBS	Work Breakdown Structure

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APPENDIX A – Model Contract and Agreement

AWARD/CONTRACT	1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING	PAGE 1 OF XX
2. CONTRACT (Proc. Inst. Ident.) NO. HR0011-08-C-XXXX	3. EFFECTIVE DATE XX XXX 2008	4. REQUISITION/PURCHASE REQUEST/PROJECT NO. XXXX/XX	

5. ISSUED BY	CODE HR0011	6. ADMINISTERED BY (If other than Item 5)	CODE
DARPA CMO ATTN: ROBIN SWATLOSKI 3701 N FAIRFAX DR ARLINGTON VA 22203-1714			

7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and zip code)	8. DELIVERY [ ] FOB ORIGIN [X] OTHER (See below) 9. DISCOUNT FOR PROMPT PAYMENT 10. SUBMIT INVOICES 2 (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN:	ITEM Section G
CODE 48VW5 FACILITY CODE		

11. SHIP TO/MARK FOR	CODE HR0011	12. PAYMENT WILL BE MADE BY	CODE HQ0347
DARPA DR. STEVEN WALKER ATTN: STRATEGIC TECHNOLOGY OFFICE 3701 NORTH FAIRFAX DRIVE ARLINGTON VA 22203-1714		DFAS INDIANAPOLIS CENTER VENDOR PAY OFFICE - INDIANAPOLIS 8899 E. 56TH STREET INDIANAPOLIS IN 46249	

13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [ ] 10 U.S.C. 2304(c)( ) [ ] 41 U.S.C. 253(c)( )	14. ACCOUNTING AND APPROPRIATION DATA See Schedule

15A. ITEM NO.	15B. SUPPLIES/ SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	SEE SCHEDULE				

15G. TOTAL AMOUNT OF CONTRACT $XXX,XXX,000.00

16. TABLE OF CONTENTS

(X)	SEC.	DESCRIPTION	PAGE(S)
		PART I - THE SCHEDULE	
X	A	SOLICITATION/ CONTRACT FORM	1
X	B	SUPPLIES OR SERVICES AND PRICES/ COSTS	X - X
X	C	DESCRIPTION/ SPECS./ WORK STATEMENT	X - X
X	D	PACKAGING AND MARKING	X
X	E	INSPECTION AND ACCEPTANCE	X
X	F	DELIVERIES OR PERFORMANCE	X - X
X	G	CONTRACT ADMINISTRATION DATA	XX - XX
X	H	SPECIAL CONTRACT REQUIREMENTS	XX - XX
		PART II - CONTRACT CLAUSES	
X	I	CONTRACT CLAUSES	XX - XX
		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS	
X	J	LIST OF ATTACHMENTS	XX
		PART IV - REPRESENTATIONS AND INSTRUCTIONS	
	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	M	EVALUATION FACTORS FOR AWARD	

CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. [X] CONTRACTOR'S NEGOTIATED AGREEMENT Contractor is required to sign this document and return 1 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

18. [ ] AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.

19A. NAME AND TITLE OF SIGNER (Type or print)	20A. NAME AND TITLE OF CONTRACTING OFFICER Robin Swatloski, Contracting Officer TEL:571-218-4542 EMAIL:Robin.Swatloski@darpa.mil
19B. NAME OF CONTRACTOR BY _____ (Signature of person authorized to sign)	19C. DATE SIGNED
20B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	20C. DATE SIGNED

NSN 7540-01-152-8069 26-107 STANDARD FORM 26 (REV. 4-85)

PREVIOUS EDITION UNUSABLE GPO 1985 O - 469-794 Prescribed by GSA FAR (48 CFR) 53.214(a)

Section B - Supplies or Services and Prices

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		1		$XXX,XXX	$XXX,XXX
	Milestone 1 - _____ FFP Contractor shall _____. FOB: Destination AO No. XXXX/XX				
				NET AMT	$ XXX,XXX

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000101					
	Funding for CLIN 0001 FFP FOB: Destination				
				NET AMT	$0.00
	ACRN AA CIN: 00000000000000000000000000000000				$ XXX,XXX

[Repeat as needed for multiple milestones.]

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002		1		$ XXX,XXX	$ XXX,XXX
	Milestone 2 - Deliverables FFP [Description of Deliverables.] FOB: Destination AO No. XXXX/XX				
				NET AMT	$ XXX,XXX

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000201					
	Funding for CLIN0002 FFP FOB: Destination				
				NET AMT	$0.00
	ACRN AA CIN: 00000000000000000000000000000				$ XXX,XXX

[Set up other CLINs as required by TDD and as appropriate.]

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

C-1 Scope of Work

(a) The Contractor shall furnish the necessary personnel, materials, facilities and other services as may be required to perform Contract Line Item Numbers (CLINs) 0001, 0002 [etc., revise as necessary] in accordance with the Statement of Work, Attachment 1 hereto, and as specified in the Contractor's proposal entitled "Blackswift Testbed Program Proposal", dated _____, 2008, copies of which are in possession of both parties.

(b) In the event of an inconsistency between the provisions of this contract and the Contractor's proposal, the inconsistency shall be resolved by giving precedence in the following order: (1) the contract, (2) the attachments to the contract, and then (3) the Contractor's proposal.
(end of clause)

C-2 Reports and Other Deliverables

(a) The Contractor shall submit the following reports and other deliverables in accordance with the delivery schedule set forth in Section F. Reports and other deliverables shall be submitted in writing, as defined in FAR 2.101, or as specified below:

[Specifics of reporting requirements, reports and other deliverables to be determined by negotiation and mutual agreement of the parties. The following DoD-approved contract deliverable data may be identified as a contract requirement.]

(1) R&D STATUS REPORT
This brief narrative, not to exceed five pages in length, shall contain the following:

(i) For first report only; the date work actually started.
(ii) Description of progress during the reporting period, supported by reasons for any change in approach reported previously
(iii) Planned activities and milestones for the next reporting period.
(iv) Description of any major items of experimental or special equipment purchased or constructed during the reporting period.
(v) Notification of any changes in key personnel associated with the contract during the reporting period.
(vi) Summary of substantive information derived from noteworthy trips, meetings, and special conferences held in connection with the contract during the reporting period.
(vii) Summary of all problems or areas of concern.
(viii) Related accomplishments since last report.
(ix) Fiscal status, to include reporting of summary level financial data in the following format: (next page)

R&D STATUS REPORT
PROGRAM FINANCIAL STATUS

Work Breakdown	Cumulative to Date			At Completion	
Structure or Task Element	Planned Expend	Actual Expend	% Budget Compl	Latest At Compl	Revised Estimate
Remarks					
Subtotal:					
Management Reserve:					
Or Unallocated Resources:					
TOTAL:					

Note: Budget at completion changes only with the amount of any scope changes. (Not affected by under run or overrun)

Based on currently authorized work:

Is current funding sufficient for the current fiscal year (FY)? (Explain in narrative if "NO")

YES NO

What is the next FY funding requirement at current anticipated levels?

$ _____

Have you included in the report narrative any explanation of the above data and are they cross-referenced?

YES NO

(2) FINAL REPORT
This report shall document the results of the complete effort and should be delivered at the completion of the contract. If the Government chooses to exercise the options under this contract, the due date for the final report is extended accordingly. Title pages shall include a disclaimer worded substantially as follows:

> "The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

The Final Technical Report summary shall include:

> Task Objectives
> Technical Problems
> General Methodology (i.e., literature review, laboratory experiments, surveys, etc.)
> Technical Results
> Important Findings and Conclusions
> Significant Hardware Development
> Special Comments
> Implications for Further Research
> Standard Form 298, September 1988

(b) Reports delivered by the Contractor in the performance of the contract shall be considered "Technical Data" as defined in Section I contract clauses entitled "Rights in Technical Data – Noncommercial Items" and "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."

(c) Bulky Reports shall be mailed by other than first-class mail unless the urgency of submission requires use of first-class mail. In this situation, one copy shall be mailed first-class and the remaining copies forwarded by less than first-class.

(d) All papers and articles published as a result of DARPA sponsored research shall include a statement reflecting the sponsorship. In addition, a bibliography of the titles and authors of all such papers are to be included in the Final Technical Report

(1) The cover or title page of each of the above reports or publications prepared, will have the following citation:

> Sponsored by
> Defense Advanced Research Projects Agency
> Tactical Technology Office (TTO)
> Program: Blackswift
> ARPA Order No. XXXX/XX, Program Code: XXXX
> Issued by DARPA/CMO under Contract No. HR0011-08-C-XXXX

(2) The title page shall include a disclaimer worded substantially as follows:

> "The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

(3) All technical reports must (i) be prepared in accordance with American National Standards Institute (ANSI) Standard Z39.18; (ii) include a Standard Form 298, August 1998; and (iii) be marked with an appropriate Distribution Statement.

(end of clause)

Section D - Packaging and Marking

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D-1 Packaging and Marking

(a) All items shall be preserved, packaged, packed and marked in accordance with best commercial practices to meet the packing requirements of the carrier, and to ensure safe delivery at destination.

(end of clause)

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at the “Ship To Address” listed in Section F.

CLAUSES INCORPORATED BY FULL TEXT

52.246-9 INSPECTION OF RESEARCH AND DEVELOPMENT (SHORT FORM) (APR 1984)

The Government has the right to inspect and evaluate the work performed or being performed under the contract, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work. If the Government performs inspection or evaluation on the premises of the Contractor or a subcontractor, the Contractor shall furnish and shall require subcontractors to furnish all reasonable facilities and assistance for the safe and convenient performance of these duties.

(End of clause)

252.246-7000 MATERIAL INSPECTION AND RECEIVING REPORT (MAR 2003)

(a) At the time of each delivery of supplies or services under this contract, the Contractor shall prepare and furnish to the Government a material inspection and receiving report in the manner and to the extent required by Appendix F, Material Inspection and Receiving Report, of the Defense FAR Supplement.

(b) Contractor submission of the material inspection and receiving information required by Appendix F of the Defense FAR Supplement by using the Wide Area WorkFlow-Receipt and Acceptance (WAWF-RA) electronic form (see paragraph (b)(1) of the clause at 252.232-7003) fulfills the requirement for a material inspection and receiving report (DD Form 250).

(End of clause)

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
0001	XX-XXX-200X	1	DARPA DR. STEVEN WALKER ATTN: TACTICAL TECHNOLOGY OFFICE 3701 NORTH FAIRFAX DRIVE ARLINGTON VA 22203-1714 703-696-2377 FOB: Destination	HR0011
000101	XX-XXX-200X		(SAME AS PREVIOUS LOCATION) FOB: Destination	HR0011
0002	XX-XXX-200X	1	(SAME AS PREVIOUS LOCATION) FOB: Destination	HR0011
000201	XX-XXX-200X		(SAME AS PREVIOUS LOCATION) FOB: Destination	HR0011

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F-1 Term of Contract

The term of the contract commences on the effective date of the contract and continues through XX months thereafter.
(end of clause)

F-2 Reports and Other Deliverables

(a) Delivery of all reports and other deliverables shall be made to the addressee specified in F-3 entitled "Report Distribution" in accordance with the following:

Item No.	Description	Due Date (on or before)
See "Delivery Information" above, Section C-2 herein and Attachment (1) – SOW.		

(end of clause)

F-3 Report Distribution

(a) DARPA/TTO
Attn: Dr. Steven Walker
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: Steven.Walker@darpa.mil
(one copy each report)

(b) DARPA/TTO
Attn: ADPM
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: adpm-tto@darpa.mil
(one copy each report)

(c) DARPA/Library
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: library@darpa.mil
(one copy of the Final Technical Report)

(d) Defense Technical Information Center

(1) Email: TR@dtic.mil
(one electronic copy of the Final Technical Report, if unclassified)

OR

(2) Attn: DTIC-BCS
8725 John J. Kingman Road, Suite 0944
Fort Belvoir, VA 22060-0944
(two hard copies of the Final Technical Report if unclassified)

(e) DARPA/CMO
Attn: Robin Swatloski
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: Robin.Swatloski@darpa.mil
(one copy each report)
(end of clause)

F-4 Notice Regarding Late Delivery

(a) In the event the Contractor anticipates difficulty in complying with the contract delivery schedule, the Contractor shall immediately notify the Contracting Officer in writing, giving pertinent details, including the date by which it expects to make delivery; PROVIDED, however, that this date shall be informational only in character and the receipt thereof shall not be construed as a waiver by the Government of any contract delivery schedule, or any rights or remedies provided by law or under this contract.

(end of clause)

Section G - Contract Administration Data

ACCOUNTING AND APPROPRIATION DATA

AA: [Insert accounting information]
AMOUNT: $XXX,XXX,000.00
CIN 00000000000000000000000000000000: $XXX,XXX,000.00

CLAUSES INCORPORATED BY FULL TEXT

G-1 Procuring Office Representative

(a) The Procuring Office Representative is Robin Swatloski, DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, telephone: 571-218-4542, e-mail: Robin.Swatloski@darpa.mil.

(end of clause)

G-2 Electronic Submission of Payment Requests

The Contractor shall contact the contract administration office at [insert ACO office contact information].

(end of clause)

G-3 Delegation of Authority for Contract Administration

[Insert ACO information], is hereby designated as the Contracting Officer's authorized representative for administering this contract in accordance with current directives.

(end of clause)

G-4 Contracting Officer's Representative (COR)

(a) Performance of work under this contract shall be subject to the technical direction of **[insert COR contact information]**. Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

(b) Technical direction shall not include any direction which:

(1) Constitutes additional work outside the scope of work;

(2) Constitutes a change as defined in Section I contract clause entitled “Changes”;

(3) In any manner causes an increase or decrease in the total estimated cost or the time required for contract performance; or

(4) Changes any of the stated terms, conditions, or specifications of the contract.
(end of clause)

G-5 Payment Instructions for Multiple Accounting Classification Citations

Payments under contract line items funded by multiple accounting classification citations shall be made from the earliest available fiscal year funding sources. The earliest assigned ACRN must be fully disbursed before making disbursements from a succeeding ACRN.
(end of clause)

Section H - Special Contract Requirements

CLAUSES INCORPORATED BY FULL TEXT

H-1 Contracting Officer

Notwithstanding any other provision of this contract, the Contracting Officer is the only individual authorized to redirect the effort or in any way amend or modify any of the terms of this contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statement of work, a modification must be issued in writing and signed by the Contracting Officer.
(end of clause)

H-2 Type of Contract

This is a firm-fixed-price (FFP) contract.
(end of clause)

H-3 Public Release or Dissemination of Information

(a) There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the DARPA Technical Information Officer (DARPA/TIO). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

(b) When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor must submit a request for public release request to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to tio@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.
(end of clause)

H-4 Key Personnel

(a) The Contractor shall notify the Contracting Officer prior to making any change in key personnel. Key personnel are defined as follows:

(1) Personnel identified in the proposal as key individuals to be assigned for participation in the performance of the contract;
(2) Personnel whose resumes were submitted with the proposal; or
(3) Individuals who are designated as key personnel by agreement of the Government and the Contractor during negotiations.

(b) The Contractor must demonstrate that the qualifications of the prospective personnel are equal to or better than the qualifications of the personnel being replaced. Notwithstanding any of the foregoing provisions, key personnel shall be furnished unless the Contractor has demonstrated to the satisfaction of the Contracting Officer that the qualifications of the proposed substitute personnel are equal to or better than the qualifications of the personnel being replaced.
(end of clause)

H-5 Restrictions on Printing

Unless otherwise authorized in writing by the Contracting Officer, reports, data, or other written material produced using funds provided by this contract and submitted hereunder shall be reproduced only by duplicating processes and shall not exceed 5,000 single page reports or a total of 25,000 pages of a multiple-page report. These restrictions do not preclude the writing, editing, preparation of manuscript or reproducible copy of related illustrative materials if required as part of this contract, or incidental printing such as forms or materials necessary to be used by the Contractor to respond to the terms of the contract.
(end of clause)

H-6 Contractor Representations and Certifications

The Contractor's Representations and Certifications dated October 15, 2007 are incorporated herein by reference.
(end of clause)

H-7 Insurance Schedule

(a) The Contractor shall maintain the types of insurance listed in FAR 28.307-2 (a), (b) and (c), with the minimum amounts of liability indicated therein. The types of insurance coverage listed in paragraphs (d) and (e) shall also be maintained when applicable.
(end of clause)

H-8 Metric System

(a) The Defense Advanced Research Projects Agency (DARPA) will consider the use of the metric system in all of its activities consistent with operational, economical, technical and safety requirements.

(b) The metric system will be considered for use in all new designs. When it is deemed not to be in the best interest of the DoD to provide metric design, justification shall be provided.

(c) Physical and operational interfaces between metric items and U.S. customary items will be designed to assure that interchangeability and interoperability will not be affected.

(d) Existing designs dimensioned in U.S. customary units will be converted to metric units only if determined to be necessary or advantageous. Unnecessary retrofit of existing systems with new metric components will be avoided where both the new metric and existing units are interchangeable and interoperable. Normally, the system of measurement in which an item is originally designed will be retained for the life of the item.

(e) During the metric transition phase hybrid metric and U.S. customary designs will be necessary and acceptable. Material components, parts, subassemblies, and semi-fabricated material, which are of adequate or when it is otherwise specifically determined to be in the best interest of the Department of Defense. Bulk materials will be specified and accepted in metric units when it is expedient or economical to do so.

(f) Technical reports, studies, and position papers, (except those pertaining to items dimensioned in U.S. customary units) will include metric units of measurement in addition to or in lieu of U.S. customary units. With respect to existing contracts, this requirement applies only if such documentation can be obtained without an increase in contract costs.

(g) Use of the dual dimensions (i.e., both metric and U.S. customary dimensions) on drawings will be avoided unless it is determined in specific instances that such usage will be beneficial. However, the use of tables on the document to translate dimensions from one system of measurement to the other is acceptable.

(end of clause)

H-9 Consent to Subcontract

(a) Pursuant to the clause of the General Provisions entitled "Subcontracts (AUG 1998)," FAR 52.244-2, the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

NAME	TOTAL AMOUNT
[INSERT SUBCONTRACTORS]	

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph 1.

(end of clause)

H-10 Small Business Subcontracting Plan and Goals

The Contractor's Small Business Subcontracting Plan, dated _____, is incorporated herein and made a part of this contract by reference.

(end of clause)

H-11 Government Furnished Property/Facilities and Services

(a) In accordance with the Section I contract clause entitled "Government Property (Cost Reimbursement, Time and Material, or Labor-Hour Contracts)", the following property, facilities and/or services shall be provided for use in the performance of this contract.

Need Date	QTY	PROPERTY NOMENCLATURE	DELIVERY TO
[Insert as appropriate]			

(end of clause)

H-12 Proprietary Technical Data and Computer Software

(a) Any deliverable technical data or computer software developed or generated at private expense and considered to be proprietary by the Contractor or subcontractors shall be delivered in accordance with DFARS 252.227-7013 and 252.227-7014. A list of such data and/or software is incorporated into the contract as Attachment No. 3.

(b) Unclassified Technical data and computer software developed under the contract will be delivered with Government Purpose Rights, to convert to unlimited rights upon 5 years following from the date of execution of the contract.

(c) Classified data and computer software will be handled in accordance with the Security Classification Specification incorporated into the contract as Attachment No. 2.

(end of clause)

H-13 Export Control Clause

Should this project develop beyond fundamental research (basic and applied research ordinarily published and shared broadly within the scientific community) with military or dual-use applications the following apply:

(a) The contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(b) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technical data or software.

(c) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(d) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

(end of clause)

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2007
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.203-14	Display of Hotline Poster(s)	DEC 2007
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-10	Price Reduction for Defective Cost or Pricing Data	OCT 1997
52.215-12	Subcontractor Cost or Pricing Data	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
	Waiver of Facilities Capital Cost of Money	
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-19	Notification of Ownership Changes	OCT 1997
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.222-3	Convict Labor	JUN 2003
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-13	Restrictions on Certain Foreign Purchases	FEB 2006
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000

52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-2	Payments Under Fixed-Price Research And Development Contracts	APR 1984
52.232-9	Limitation On Withholding Of Payments	APR 1984
52.232-23	Assignment Of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.242-13	Bankruptcy	JUL 1995
52.243-1 Alt V	Changes--Fixed-Price (Aug 1987) - Alternate V	APR 1984
52.244-6	Subcontracts for Commercial Items	MAR 2007
52.245-1	Government Property	JUN 2007
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	MAY 2004
52.253-1	Computer Generated Forms	JAN 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.225-7012	Preference For Certain Domestic Commodities	JAN 2007
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7013	Rights in Technical Data--Noncommercial Items	NOV 1995
252.227-7014	Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation	JUN 1995
252.227-7015	Technical Data--Commercial Items	NOV 1995
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7019	Validation of Asserted Restrictions--Computer Software	JUN 1995
252.227-7027	Deferred Ordering Of Technical Data Or Computer Software	APR 1988
252.227-7034	Patents--Subcontracts	APR 1984
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999

252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests	MAR 2007
252.232-7010	Levies on Contract Payments	DEC 2006
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	JAN 2007
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.227-11 PATENT RIGHTS--RETENTION BY THE CONTRACTOR (SHORT FORM) (JUN 1997)

(a) Definitions.

(1) "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321, et seq.).

(2) "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(3) "Nonprofit organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(4) "Practical application" means to manufacture, in the case of a composition of product; to practice, in the case of a process or method, or to operate, in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that is benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

(5) "Small business firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in Government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) "Subject invention" means any invention of the contractor conceived or first actually reduced

to practice in the performance of work under this contract, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of contract performance.

(b) Allocation of principal rights. The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention disclosure, election of title, and filing of patent application by Contractor. (1) The Contractor will disclose each subject invention to the Federal agency within 2 months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The disclosure to the agency shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the agency, the Contractor will promptly notify the agency of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Contractor.

(2) The Contractor will elect in writing whether or not to retain title to any such invention by notifying the Federal agency within 2 years of disclosure to the Federal agency. However, in any case where publication, on sale or public use has initiated the 1-year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the agency to a date that is no more than 60 days prior to the end of the statutory period.

(3) The Contractor will file its initial patent application on a subject invention to which it elects to retain title within 1 year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Contractor will file patent applications in additional countries or international patent offices within either 10 months of the corresponding initial patent application or 6 months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure election, and filing under subparagraphs (c)(1), (2), and (3) of this clause may, at the discretion of the agency, be granted.

(d) Conditions when the Government may obtain title. The Contractor will convey to the Federal agency, upon written request, title to any subject invention--

(1) If the Contractor fails to disclose or elect title to the subject invention within the times specified in paragraph (c) of this clause, or elects not to retain title; provided, that the agency may only request title within 60 days after learning of the failure of the Contractor to disclose or elect within the specified times.

(2) In those countries in which the Contractor fails to file patent applications within the times specified in paragraph (c) of this clause; provided, however, that if the Contractor has filed a patent application in a country after the times specified in paragraph (c) of this clause, but prior to its receipt of the written request of the Federal agency, the Contractor shall continue to retain title in that country.

(3) In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum rights to Contractor and protection of the Contractor right to file. (1) The Contractor will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Contractor fails to disclose the invention within the times specified in paragraph (c) of this clause. The Contractor's license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the Contractor is a party and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the contract was awarded. The license is transferable only with the approval of the Federal agency, except when transferred to the successor of that part of the Contractor's business to which the invention pertains.

(2) The Contractor's domestic license may be revoked or modified by the funding Federal agency to the extent necessary to achieve expeditious practical application of subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR Part 404 and agency licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the funding Federal agency to the extent the Contractor, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the funding Federal agency will furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor will be allowed 30 days (or such other time as may be authorized by the funding Federal agency for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with applicable regulations in 37 CFR Part 404 and agency regulations, if any, concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

(f) Contractor action to protect the Government's interest. (1) The Contractor agrees to execute or to have executed and promptly deliver to the Federal agency all instruments necessary to (i)

establish or confirm the rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and (ii) convey title to the Federal agency when requested under paragraph (d) of this clause and to enable the Government to obtain patent protection throughout the world in that subject invention.

(2) The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under contract in order that the Contractor can comply with the disclosure provisions of paragraph (c) of this clause, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by subparagraph (c) (1) of this clause. The Contractor shall instruct such employees, through employee agreements or other suitable educational programs, on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Contractor will notify the Federal agency of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Contractor agrees to include, within the specification of any United States patent application and any patent issuing thereon covering a subject invention, the following statement, "This invention was made with Government support under (identify the contract) awarded by (identify the Federal agency). The Government has certain rights in the invention."

(g) Subcontracts. (1) The Contractor will include this clause, suitably modified to identify the parties, in al subcontracts, regardless of tier, for experimental, developmental, or research work to be performed by a small business firm or domestic nonprofit organization. The subcontractor will retain all rights provided for the Contractor in this clause, and the Contractor will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The Contractor will include in all other subcontracts, regardless of tier, for experimental, developmental, or research work the patent rights clause required by Subpart 27.3.

(3) In the case of subcontracts, at any tier, the agency, subcontractor, and the Contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under paragraph (j) of this clause.

(h) Reporting on utilization of subject inventions. The Contractor agrees to submit, on request, periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or

assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other data and information as the agency may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by the agency in connection with any march-in proceeding undertaken by the agency in accordance with paragraph (j) of this clause. As required by 35 U.S.C. 202(c) (5), the agency agrees it will not disclose such information to persons outside the Government without permission of the Contractor.

(i) Preference for United States industry. Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any product embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in rights. The Contractor agrees that, with respect to any subject invention in which it has acquired title, the Federal agency has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the agency to require the Contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request the Federal agency has the right to grant such a license itself if the Federal agency determines that--

(1) Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee, or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee, or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special provisions for contracts with nonprofit organizations. If the Contractor is a nonprofit organization, it agrees that--

(1) Rights to a subject invention in the United States may not be assigned without the approval of

the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions; provided, that such assignee will be subject to the same provisions as the Contractor;

(2) The Contractor will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject inventions that are small business firms, and that it will give a preference to a small business firm when licensing a subject invention if the Contractor determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the Contractor is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the contractor. However, the Contractor agrees that the Secretary of Commerce may review the Contractor's licensing program and decisions regarding small business applicants, and the Contractor will negotiate changes to its licensing policies, procedures, or practices with the Secretary of Commerce when the Secretary's review discloses that the Contractor could take reasonable steps to more effectively implement the requirements of this subparagraph (k) (4).

(l) Communications.

All written communications required by this clause shall be submitted to the Administrative Contracting Officer (ACO). All required reporting shall be accomplished using the i-Edison.gov reporting website (https://s-edison.info.nih.gov/iEdison/).
(End of clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.204-7006 BILLING INSTRUCTIONS (OCT 2005)

When submitting a request for payment, the Contractor shall--

(a) Identify the contract line item(s) on the payment request that reasonably reflect contract work performance; and

(b) Separately identify a payment amount for each contract line item included in the payment request.

(End of clause)

252.225-7006 QUARTERLY REPORTING OF ACTUAL CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES (MAY 2007)

(a) Definition. United States, as used in this clause, means the 50 States, the District of Columbia, and outlying areas.

(b) Reporting requirement. Except as provided in paragraph (c) of this clause, within 10 days after the end of each quarter of the Government's fiscal year, the Contractor shall report any subcontract, purchase, or intracompany transfer that--

(1) Will be or has been performed outside the United States;

(2) Exceeds the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation; and

(3) Has not been identified in a report for a previous quarter.

(c) Exception. Reporting under this clause is not required if--

(1) A foreign place of performance is the principal place of performance of the contract; and

(2) The Contractor specified the foreign place of performance in its offer.

(d) Submission of reports. The Contractor shall submit the reports required by this clause to: Deputy Director of Defense Procurement and Acquisition Policy (Contract Policy and International Contracting), OUSD(AT&L)DPAP(CPIC), Washington, DC 20301-3060.

(e) Report format. The Contractor--

(1) Shall submit reports using--

(i) DD Form 2139, Report of Contract Performance Outside the United States; or

(ii) A computer-generated report that contains all information required by DD Form 2139; and

(2) May obtain copies of DD Form 2139 from the Contracting Officer or via the Internet at http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm.

(f) Subcontracts. The Contractor--

(1) Shall include the substance of this clause in all first-tier subcontracts exceeding $550,000, except those for commercial items, construction, ores, natural gases, utilities, petroleum products and crudes, timber (logs), or subsistence;

(2) Shall provide the number of this contract to its subcontractors required to submit reports under this clause; and

(3) Shall require the subcontractor, with respect to performance of its subcontract, to comply with the requirements directed to the Contractor in paragraphs (b) through (e) of this clause.

(End of clause)

252.235-7010 Acknowledgment of Support and Disclaimer. (MAY 1995)

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material based on or developed under this contract, stated in the following terms: This material is based upon work supported by the [name of contracting agency(ies)] under Contract No. [Contracting agency(ies) contract number(s)].

(b) All material, except scientific articles or papers published in scientific journals, must, in addition to any notices or disclaimers by the Contractor, also contain the following disclaimer: Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the [name of contracting agency(ies)].

Section J - List of Documents, Exhibits and Other Attachments

Exhibit/Attachment Table of Contents
Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment X	Task Description Document;		
Attachment X	Integrated Master Plan		
Attachment X	Integrated Master Schedule		
Attachment X	Description of Payable Milestones		
Attachment X	Work Breakdown Structure		
Attachment X	DD254		
Attachment X	Asserted Rights		
Attachment X	Reporting Requirements		

ATTACHMENT A.1 - OTA MODEL AGREEMENT AND INSTRUCTIONS

Instructions to an Offeror for an Other Transaction Authority (OTA) Award

The following shall be provided in the OTA volume (Volume 4):

1. The offeror shall provide a completed Other Transaction Agreement filling in all blanks contained in the model agreement as noted.

2. **Offerors shall complete all Attachments as appropriate.**

Note: This negotiation may begin immediately upon receipt of proposed agreement.

OTHER TRANSACTION FOR PROTOTYPE MODEL AGREEMENT

BETWEEN

(INSERT TEAM NAME AND ADDRESS)
AND
THE DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1714

CONCERNING:

BLACKSWIFT TEST BED PROGRAM
PHASE I – PRELIMINARY DESIGN REVIEW
OPTIONAL PHASE II – CRITICAL DESIGN REVIEW
OPTIONAL PHASE III – FLIGHT READINESS REVIEW

Agreement No.: HR0011-08-9-XXXX
DARPA Order No.:
Total Estimated Government Funding of the Phase II Agreement: $
Team's Cost Share/Contribution: $
Funds Obligated: $
Authority: 10 U.S.C. 2371 and Section 845 of the 1994 National Defense Authorization Act for Fiscal Year 1994, as amended.

Line of Appropriation: AA

This Agreement is entered into between the United States of America, hereinafter called the Government, represented by The Defense Advanced Research Projects Agency (DARPA), and the (INSERT NAME of TEAM) pursuant to and under U.S. Federal law.

FOR (INSERT TEAM NAME)	FOR THE UNITED STATES OF AMERICA THE DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
_____	_____
(Signature)	(Signature)
(Name, Title) (Date)	(Name, Title) (Date)

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ARTICLE I: SCOPE OF THE AGREEMENT

This article should state your dual vision for the Preliminary Design Review (Phase I of the Blackswift Program) and the optional Phases II and III, Critical Design Review and Flight Readiness Review respectively. You should include a detailed description of how your proposed program satisfies the proposed statement of objectives and solicitation Appendices. If there are dual or commercial uses of the developed technologies, be sure to include them but discuss the military uses first. Efficient sharing of required data with the major subcontractors is essential for the success of Blackswift Program. This article should clearly address your corporate commitment to ensuring that proper sharing of data is accomplished and commitment through Phase III of the program is maintained.

In addition, this article should discuss the way you will interact with the DARPA program team. Suggested wording (i.e., paragraphs used in other DARPA Agreements) for your consideration follows:

"DARPA will have continuous involvement with the Contractor. DARPA will obtain access to program results and certain rights to patents and data pursuant to Articles VIII and IX. DARPA and the Contractor are bound to each other by a duty of good faith and best effort in achieving the program objectives."

"This Agreement is an 'other transaction' pursuant to 10 U.S.C. 2371 and section 845 of the 1994 National Defense Authorization Act, as amended. The Parties agree that the purpose of this Agreement is to acquire the Team's best efforts in development of design concepts and trade-off studies supporting that design. The delivery of this design is a prototype within the meaning of the above-mentioned statute. The Federal Acquisition Regulation (FAR) and Department of Defense FAR Supplement (DFARS) apply only as specifically referenced herein. This Agreement is not intended to be, nor shall it be construed as, by implication or otherwise, a partnership, a corporation, or other business organization."

Terms such as "Team," "Team Members" and "program," etc. should also be defined in this article.

ARTICLE II: TERM

A. The Term of this Agreement

This Agreement commences upon the date of the last signature hereon and continues through the Preliminary Design Review with options for Phase II and Phase III. For planning purposes, the estimated period of performance for Phase I is date of award through 12 months. This agreement will be updated to exercise options for entering into Phase II and Phase III. Completion criteria for Phases I, II and III milestones are defined in Article IV, Payable Event Schedule and Deliverables.

B. Termination Provisions

Subject to a reasonable determination that this agreement will not produce beneficial results commensurate with the expenditure of resources, the Government may terminate this Agreement by written notice to the Team, provided that such written notice is preceded by consultation between the Parties. In the event of a termination of the Agreement, it is agreed that disposition of data developed under this Agreement, shall be in accordance with the provisions set forth in Articles IX, Data Rights. The Government and Team will negotiate in good faith a reasonable and timely adjustment of all outstanding issues between the Parties as a result of termination. Failure of the Parties to agree to a reasonable adjustment will be resolved pursuant to Article VII, Disputes. The Government has no obligation to reimburse the Team beyond the amount of the next milestone and the Agreement funded amount, whichever is greater, in the event of termination if the Team decides to terminate.

C. Extending the Term

The Parties may extend by mutual written agreement the term of this Agreement if funding availability and research opportunities reasonably warrant. Any extension shall be formalized through modification of the Agreement by the Agreements Officer and the Team Administrator.

ARTICLE III: STATEMENT OF OBJECTIVES

This article should also summarize the scope of the work and the business arrangement to which you are committing (as described in detail in this article, Statement of Objectives) by entering into this Agreement.

The Team will reference the attached Integrated Master Schedule (IMS) and Integrated Master Plan (IMP) in accordance with the guidance provided in the solicitation. This SOW describes the tasks that the Team must accomplish to be successful in this Preliminary Design Review (Phase I) and optional Phases. Consider the Government Statement of Objectives, Appendices and the overall Blackswitft program objectives and other guidance provided in the solicitation.

ARTICLE IV: PAYABLE EVENT SCHEDULE AND DELIVERABLES

A. Payment Schedule

The Team shall perform the work required by Article III and the TDD attached. The Team shall be paid for each Payable Milestone accomplished and delivered in accordance with the Schedule of Payments and Payable Milestones attached. The Team shall propose the accomplishment criteria for the milestone events. Both the Schedule of Payments and the Funding Schedule may be revised or modified in accordance with subparagraph C of this article.

B. Schedule of Payments and Payable Milestones

The Team shall propose milestone accomplishment criteria and deliverables to be incorporated into this agreement. Reference Government provided accomplishments and criteria guidelines provided in solicitation as a starting point for your proposal.

C. Modifications

1. At any time during the term of the Agreement, progress or results may indicate that a change in the Statement of Objective/SOO and/or the Payable Milestones would be beneficial to the BLACKSWIFT program objectives. Recommendations for modifications, including justifications to support any changes to the Statement of Objectives/SOO and/or the Payable Milestones, will be documented in a letter and submitted by the Team to the DARPA Program Manager with a copy to the DARPA Agreement Officer. This letter will detail the technical, chronological, and financial impact of the proposed modification to the research program. Any resultant modification is subject to mutual agreement of the parties. The Government is not obligated to pay for additional or revised Payable Milestones until the Payable Milestones Schedule is formally revised by the DARPA Agreements Officer and made part of this Agreement.

2. The DARPA Program Manager shall be responsible for the review and verification of milestone accomplishment criteria and any recommendations to revise or otherwise modify the Agreement Statement of Objectives/SOO, Schedule of Payments and Payable Milestones, or other proposed changes to the terms and conditions of this Agreement.

3. For minor or administrative Agreement modifications (e.g., changes in the paying office or appropriation data, changes to Government or Team personnel identified in the Agreement, etc.), DARPA shall make these types of changes unilaterally.

4. The Government will be responsible for effecting all modifications to this agreement.

ARTICLE V: AGREEMENT ADMINISTRATION

Administrative and contractual matters under this Agreement shall be referred to the following representatives of the parties:

DARPA: Ms. Robin M. Swatloski, Agreements Officer, Tel: (571) 218-4542

Team: (INSERT NAME) (INSERT TITLE) (INSERT TELEPHONE NUMBER)

Technical matters under this Agreement shall be referred to the following representatives:

DARPA: Dr. Steve Walker, Program Manager, Tel: (703) 696-2377

Team: (INSERT NAME) (INSERT TITLE) (INSERT TELEPHONE NUMBER)

Either party may change its representatives named in this Article by written notification to the other party. The Government will effect the change as stated in subparagraph C.4 of Article IV above.

ARTICLE VI: OBLIGATION AND PAYMENT

A. Obligation

The Government's liability to make payments to the Team is limited to only those funds obligated under this Agreement or by amendment to the Agreement. DARPA may obligate funds to the Agreement incrementally.

B. Payments

1. The following information shall be included on each invoice:

Agreement Number
Invoice Number
A description of services performed
Quantity of service received or performed
The time of period covered by the invoice
Terms of Payment
Payment Office
Amount claimed

2. The Team shall document each Payable Milestone by submitting deliverables in accordance with the Payable Milestone Schedule and Accomplishment Criteria. The Team shall submit an original and one (1) copy of all invoices to the Agreements Officer for payment approval. After written verification of the accomplishment of the Payable Milestone by the DARPA Program Manager, and approval by the Agreements Officer, the invoices will be forwarded to the payment office within fifteen (15) calendar days of receipt of the invoices at DARPA. Payment approval for the final Payable Milestone will be made after reconciliation. Payments will be made by Defense Accounting Office, DFAS, Attention: Vendor Pay, 8899 East 56th Street, Indianapolis, IN 46249-1325 within fifteen (15) calendar days of DARPA's transmittal. Subject to change only through written Agreement modification, payment shall be made via electronic funds transfer to the Contractor's address set forth below:

3. Bank Account of Payee:

Bank:
Address:
Routing Transit Number:
Depositor Account Title:
Depositor Number:

4. Financial Records and Reports: The Team's relevant financial records associated with this Agreement are not subject to examination or audit by the Government, except as noted below, since the confirmed accomplishment of the appropriate milestone completes the obligation of both parties.

5. Comptroller General Access to Records: To the extent that the total government payments under this Agreement exceed $5,000,000, the Comptroller General, at its discretion, shall have access to and the right to examine records of any party to the agreement or any entity that participates in the performance of this agreement that directly pertain to and involve transactions relating to, the agreement for a period of three (3) years after final payment is made. This requirement shall not apply with respect to any party to this agreement or any entity that participates in the performance of the agreement, or any subordinate element of such party or entity, that has not entered into any other agreement (contract, grant, cooperative agreement, or "other transaction") that provides for audit access by a government entity in the year prior to the date of this agreement. This paragraph only applies to any record that is created or maintained in the ordinary course of business or pursuant to a provision of law. The terms of this paragraph shall be included in all sub-agreements to the Agreement.

ARTICLE VII: DISPUTES

A. General

The Parties shall communicate with one another in good faith and in a timely and cooperative manner when raising issues under this Article.

B. Dispute Resolution Procedures

1. Any disagreement, claim or dispute between the Government and the Team concerning questions of fact or law arising from or in connection with this Agreement, and, whether or not involving an alleged breach of this Agreement, may only be raised under this Article.

2. Whenever disputes, disagreements, or misunderstandings arise, the Parties shall attempt to resolve the issue(s) involved by discussion and mutual agreement as soon as practicable. In no event shall a dispute, disagreement or misunderstanding which arose more than three (3) months prior to the notification made under subparagraph B.3 of this Article constitute the basis for relief under this article unless the Director of DARPA in the interests of justice waives this requirement.

3. Failing resolution by mutual Agreement, the aggrieved Party shall document the dispute, disagreement, or misunderstanding by notifying the other Party (through the DARPA Agreements Officer) in writing of the relevant facts, identify unresolved issues, and specify the clarification or remedy sought. Within five (5) working days after providing notice to the other Party, the aggrieved Party may, in writing, request a joint decision by the DARPA Director, Contract Management Office, and Representative of the Team (“Team Representative”). The other Party shall submit a written position on the matter(s) in dispute within thirty (30) calendar days after being notified that a decision has been requested. The Director, Contract Management

Office and the Team Representative shall conduct a review of the matter(s) in dispute and render a decision in writing within thirty (30) calendar days of receipt of such written position. Any such joint decision is final and binding.

4. In the absence of a joint decision, upon written request to the Director of DARPA, made within thirty (30) calendar days or upon unavailability of a joint decision under subparagraph B.3 above, the dispute shall be further reviewed. The Director of DARPA may elect to conduct this review personally or through a designee or jointly with a representative of the other Party who is a senior official of the Party. Following the review, the Director of DARPA or designee will resolve the issue(s) and notify the Parties in writing. Such resolution is not subject to further administrative review and, to the extent permitted by law, shall be final and binding.

ARTICLE VIII: PATENT RIGHTS

A. Definitions

1. "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code.

2. "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.

3. "Practical application" means to manufacture, in the case of a composition of product; to practice, in the case of a process or method, or to operate, in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is capable of being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

4. "Subject invention" means any invention of a Team Member conceived or first actually reduced to practice in the performance of work under this Agreement.

B. Allocation of Principal Rights

The Team shall retain the entire right, title, and interest throughout the world to each subject invention consistent with this Article and 35 U.S.C. § 202. With respect to any subject invention in which the Team retains title, DARPA shall have a non-exclusive, nontransferable, irrevocable, paid-up license to practice or have practiced on behalf of the United States the subject invention throughout the world. Notwithstanding the above, the Team may elect to provide full or partial rights that it has retained to Team Members or other parties.

C. Action to Protect the Government's Interest

1. The Team agrees to execute or to have executed and promptly deliver to DARPA all instruments necessary to establish or confirm the rights the Government has throughout the

world in those subject inventions to which the Consortium elects to retain title and to enable the Government to obtain patent protection throughout the world in that subject invention.

2. The Team shall include, within the specification of any United States patent application and any patent issuing thereon covering a subject invention, the following statement: "This invention was made with Government support under Agreement No. HR0011-04-9-XXXX awarded by DARPA. The Government has certain rights in the invention."

D. Lower Tier Agreements

The Team shall include this Article, suitably modified, to identify the Parties, in all subcontracts or lower tier agreements, regardless of tier, for experimental, development, or research work.

E. Reporting on Utilization of Subject Inventions

The Team agrees to submit a final report on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Team or its licensees or assignees. The report shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Team subcontractor(s), and such other data and information as the agency may reasonably specify. The Team also agrees to provide additional reports as may be requested by DARPA in connection with any march-in proceedings undertaken by DARPA in accordance with paragraph G of this Article. Consistent with 35 U.S.C. § 202(c) (5), DARPA agrees it shall not disclose such information to persons outside the Government without permission of the Team.

F. Preference for American Industry

Notwithstanding any other provision of this Article, the Team agrees that it shall not grant to any person the exclusive right to use or sell any subject invention in the United States or Canada unless such person agrees that any product embodying the subject invention or produced through the use of the subject invention shall be manufactured substantially in the United States or Canada. However, in individual cases, the requirements for such an agreement may be waived by DARPA upon a showing by the Team that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that, under the circumstances, domestic manufacture is not commercially feasible.

G. March-in Rights

The Team agrees that, with respect to any subject invention in which it has retained title, DARPA has the right to require the Team, an assignee, or exclusive licensee of a subject invention to grant a non-exclusive license to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Team, assignee, or exclusive licensee refuses such a request, DARPA has the right to grant such a license itself if DARPA determines that:

1. Such action is necessary because the Team or assignee has not taken effective steps, consistent with the intent of this Agreement, to achieve practical application of the subject invention;

2. Such action is necessary to alleviate health or safety needs that are not reasonably satisfied by the Team, assignee, or their licensees;

3. Such action is necessary to meet requirements for public use and such requirements are not reasonably satisfied by the Team, assignee, or licensees; or

4. Such action is necessary because the agreement required by paragraph (I) of this Article has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such Agreement.

H. Communications.

All written communications required by this Article shall be submitted to the Administrative Contracting Officer (ACO). All required reporting shall be accomplished using the i-Edison.gov reporting website (https://s-edison.info.nih.gov/iEdison/).

ARTICLE IX: DATA RIGHTS

(It is the Government's desire to obtain "unlimited" data rights to all data produced, generated or delivered during this agreement.

ARTICLE X: FOREIGN ACCESS TO TECHNOLOGY

(NOTE: It is DARPA's intention to restrict this technology from flowing overseas without approval to ensure the economic and security issues have been resolved prior to any release.

This Article shall remain in effect during the term of the Agreement and for five years thereafter.

A. Definitions

"Foreign Firm or Institution" means a firm or institution organized or existing under the laws of a country other than the United States, its territories, or possessions. The term includes, for purposes of this Agreement, any agency or instrumentality of a foreign government; and firms, institutions or business organizations that are owned or substantially controlled by foreign governments, firms, institutions, or individuals.

"Know-How" means all information including, but not limited to discoveries, formulas, materials, inventions, processes, ideas, approaches, concepts, techniques, methods, software, programs, documentation, procedures, firmware, hardware, technical data, specifications, devices, apparatus and machines.

"Technology" means discoveries, innovations, Know-How and inventions, whether patentable or not, including computer software, recognized under U.S. law as intellectual creations to which rights of ownership accrue including, but not limited to, patents, trade secrets, maskworks, and copyrights developed under this Agreement.

B. General

The Parties agree that research findings and technology developments in (INSERT TYPE OF TECHNOLOGY) technology may constitute a significant enhancement to the national defense, and to the economic vitality of the United States. Accordingly, access to important technology developments under this Agreement by Foreign Firms or Institutions must be carefully controlled. The controls contemplated in this Article are in addition to, and are not intended to change or supersede, the provisions of the International Traffic in Arms Regulation (22 CFR pt. 121 et seq.), the DoD Industrial Security Regulation (DoD 5220.22-R) and the Department of Commerce Export Regulation (15 CFR pt. 770 et seq.)

C. Restrictions on Sale or Transfer of Technology to Foreign Firms or Institutions

1. In order to promote the national security interests of the United States and to effectuate the policies that underlie the regulations cited above, the procedures stated in subparagraphs C.2, C.3, and C.4 below shall apply to any transfer of Technology. For purposes of this paragraph, a transfer includes a sale of the company, and sales or licensing of Technology. Transfers do not include:

(a) sales of products or components, or
(b) licenses of software or documentation related to sales of products or components, or
(c) transfer to foreign subsidiaries of the Contractor for purposes related to this Agreement, or
(d) transfer which provides access to Technology to a Foreign Firm or Institution which is an approved source of supply or source for the conduct of research under this Agreement provided that such transfer shall be limited to that necessary to allow the firm or Institution to perform its approved role under this Agreement.

2. The Team shall provide timely notice to the Government of any proposed transfers from the Team of technology developed with Government funding under this Agreement to Foreign Firms or Institutions. If the Government determines that the transfer may have adverse consequences to the national security interests of the United States, the Team, its vendors, and the Government shall jointly endeavor to find alternatives to the proposed transfer which obviate or mitigate potential adverse consequences of the transfer but which provide equivalent benefits to the Team.

3. In any event, the Team shall provide written notice to the DARPA Program Manager and Agreements Officer of any proposed transfer to a foreign firm or institution at least sixty (60) calendar days prior to the proposed date of transfer. Such notice shall cite this Article and shall state specifically what is to be transferred and the general terms of the transfer. Within thirty

(30) calendar days of receipt of the Team's written notification, the DARPA Agreements Administrator shall advise the Team whether it consents to the proposed transfer. In cases where the Government does not concur or sixty (60) calendar days after receipt and the Government provides no decision, the Team may utilize the procedures under Article VII, Disputes. No transfer shall take place until a decision is rendered.

4. Except as provided in subparagraph C.1 above and in the event the transfer of Technology to Foreign Firms or Institutions is approved by the Government, the Team shall (a) refund to the Government funds paid for the development of the Technology and (b) negotiate a license with the Government to the Technology under terms that are reasonable under the circumstances.

D. Lower Tier Agreements

The Team shall include this Article, suitably modified, in all subcontracts or lower tier Agreements, for experimental, developmental, or research work.

ARTICLE XI: CIVIL RIGHTS ACT

This Agreement is subject to the requirements of Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000-d) relating to nondiscrimination in employment.

ARTICLE XII: GOVERNMENT FURNISHED EQUIPMENT PROPERTY, INFORMATION FACILITIES AND SERVICES

The following Government Equipment property, information facilities, and services shall be provided upon the written approval of the cognizant contracting officers:

(Offeror will list all desired GFE, GFP, GFI, GFF, and GFS.)

ARTICLE XIII: TITLE AND DISPOSITION OF PROPERTY

A. Definitions

In this article “property” means any tangible personal property other than property actually consumed during the execution of work under this agreement.

B. Title to Property

Contractor may acquire property under this Agreement, with Government funds, which is necessary to further the research and development goals of the program. Title to property shall vest in the Contractor upon acquisition with no further obligation of the Parties unless otherwise determined by the DARPA Agreements Administration in paragraph C below. Any item of property with a cumulative acquisition value greater than $15,000 shall require prior written approval by the DARPA Agreement Administrator with the exception of the items identified below.

Items of Property With a Cumulative Acquisition Value Greater Than $15K

Item Description	Qty	Total Value

C. Disposition of Property

At the completion of the term of this Agreement, the Contractor shall provide the Government a list of any item of property with an acquisition value greater than $5,000. Upon written direction from the Government, the items of property set forth therein shall be disposed of in the following manner:

1. Purchased by the contractor at an agreed-upon price, the price to represent fair market value, with the proceeds of the sale being returned to DARPA; or
2. Transferred to a Government research facility with title and ownership being transferred to the Government; or
3. Donated to a mutually agreed University or technical learning center for research purposes; or
4. Any other DARPA-approved disposition procedure.

D. Lease vs. Buy Considerations

The Government fully expects prime/subcontractors/teammates to make maximum use of their capital equipment as it applies to accomplishing Blackswift activities. The Contractor shall consider leasing versus buying any acquisition item having a cumulative total above $2500.

E. Delivered Hardware

The Government does intend to take title to Blackswift components, or other prototypes. Below is a list identifying all prototypes being developed under this agreement:

ARTICLE XIV: SECURITY

This program shall be provided protection as required by the appropriate security requirement required by the DD Form 254 (to be completed by the contractor and submitted with the proposed Agreement). The highest level of classification involved in the performance of the agreement is Top Secret. It is the government's position that the highest security classification of any item deliverable as a result of this agreement is Secret. This document is unclassified.

ARTICLE XV: REPRESENTATIONS AND FEDERAL ACQUISITION REGULATIONS

The Contractor, as an experienced government contractor, has internal systems in place which are designed to comply with the legal and regulatory requirements applicable to government contracts including such certification as are required by ethics and procurement integrity, small business, women owned and small disadvantaged business, affirmative action, and

environmental law. None of the participant in this contractual effort are currently debarred or suspended from doing business with the Government.

ARTICLE XVI: SUBCONTRACTORS

The Contractor shall make every effort to satisfy the intent of competitive biding of subcontracts to the extent practical.

ARTICLE XVII: EXECUTION

This Agreement constitutes the entire agreement of the Parties and supersedes all prior and contemporaneous agreements, understandings, negotiations and discussions among the Parties, whether oral or written, with respect to the subject matter hereof. This Agreement may be revised only by written consent of the Contractor and the DARPA Agreements Officer. This Agreement, or modifications thereto, may be executed in counterparts each of which shall be deemed as original, but all of which taken together shall constitute one and the same instrument.

ARTICLE XVIII: WORK BREAKDOWN STRUCTURE UPDATES

The Work Breakdown Structure (WBS) as proposed by the contractor is included as ATTACHMENT XX to this Agreement. Throughout performance it is envisioned that this WBS will evolve as progress is made by the contractor in performance hereunder. As the program evolves this WBS shall be updated no less frequently than every six (6) months or sooner if circumstances warrant such a change. It is intended that the WBS will serve as a living document reflecting the most current status of the relevant technologies and planned activities under the program.

ARTICLE XIX: PAYABLE MILESTONE SCHEDULE

Payment Schedule

The Contractor shall perform the work as described by this agreement. The Contractor shall be paid for its efforts based on accomplishing the Payable Milestones. The Schedule of Payments and Payable Milestones set forth below.

The Contractor shall propose the content, timing, for all payable milestones. The milestones and meeting will be scheduled to optimize cost and schedule. Both the Schedule of Payments and the Funding Schedule set forth below may be revised in accordance with Article III. Below, the Contractor shall cross-reference the payable milestone activities (task) identified in the IMS and IMP to the maximum extent possible, leading up to the milestone accomplishment criteria, identify the milestone accomplishment criteria, the payment amount and schedule. ***This will have to be done separately for each program phase. It is understood by both parties that the payable milestones for Phase II and III may be adjusted as the program evolves.***

Schedule of Payments and Payable Milestones

1. Phase I, II and III

Task	Payable Milestone	Payment Amount	Payment Schedule

(Contractor Shall Complete)

The DARPA Program Manger shall be responsible for the review and verification of milestone accomplishment criteria and any recommendation to revise or otherwise modify the Agreement.

ARTICLE XX: COMPLETION CRITERIA

The following completion criteria define the successful completion of the all program phases.

(Contractor Complete)

ATTACHMENT X

Task Description Document

(To be provided by the Contractor)

ATTACHMENT X

INTEGRATED MASTER PLAN

(To be provided by the Contractor)

ATTACHMENT X

INTEGRATED MASTER SCHEDULE

(To be provided by the Contractor)

ATTACHMENT X

SCHEDULE OF PAYMENTS AND PAYABLE MILESTONES

TASK	MONTH	PAYABLE MILESTONES	DARPA PAYMENT	ABC PAYMENT

ATTACHMENT XX

Work Breakdown Structure (Budget Allocation)

To be completed by the contractor

ATTACHMENT X

REPORT REQUIREMENTS

A. QUARTERLY REPORT

On or before ninety (90) calendar days after the effective date of the Agreement and quarterly thereafter throughout the term of the Agreement, ABC shall submit or otherwise provide a quarterly report. Two (2) copies shall be submitted or otherwise provided to the DARPA Program Manager, one (1) copy shall be submitted or otherwise provided to the DARPA Agreements Officer, and one (1) copy shall be submitted or otherwise provided to DARPA/(INSERT PROGRAM OFFICE), Attn: Assistant Director for Program Management. The report will have two (2) major sections.

1. Technical Status Report. The technical status report will detail technical progress to date and report on all problems, technical issues, major developments, and the status of external collaborations during the reporting period.

2. Business Status Report. The business status report shall provide summarized details of the resource status of this Agreement, including the status of ABC contributions. This report will include a quarterly accounting of current expenditures as outlined in the Annual Program Plan. Any major deviations, over plus or minus 10%, shall be explained along with discussions of the adjustment actions proposed. The report will also include an accounting of any interest earned on Government funds. ABC is reminded that interest in amounts greater than $250 per year is not expected to accrue under this Agreement. In the event that this interest does accrue on Government funds, ABC is required to provide an explanation for the accrual in the business report. Depending on the circumstances, the Payable Milestones may require adjustment.

B. ANNUAL PROGRAM PLAN DOCUMENT

ABC shall submit or otherwise provide to the DARPA Agreements Officer's Representative and DARPA Agreements Officer one (1) copy each of a report which describes the Annual Program Plan as described in Article III, Section B. This document shall be submitted not later than thirty (30) calendar days following the Annual Site Review as described in Article III, Section B.

C. SPECIAL TECHNICAL REPORTS

As agreed to by ABC and the DARPA Agreements Officer's Representative, ABC shall submit or otherwise provide to the DARPA Agreements Officer's Representative and DARPA Agreements Officer one (1) copy each of special reports on significant events such as significant target accomplishments by ABC, significant tests, experiments, or symposia.

D. PAYABLE MILESTONES REPORTS

ABC shall submit or otherwise provide to the DARPA Agreements Officer's Representative and DARPA Agreements Officer documentation describing the extent of accomplishment of Payable

Milestones. This information shall be as required by Article V, paragraph B and shall be sufficient for the DARPA Agreements Officer's Representative to reasonably verify the accomplishment of the milestone of the event in accordance with the Statement of Work.

E. FINAL REPORT (NOTE: The Final Report is included in the last Payable Milestone for the completed Agreement)

1. ABC shall submit or otherwise provide a Final Report making full disclosure of all major developments by ABC upon completion of the Agreement or within sixty (60) calendar days of termination of this Agreement. With the approval of the DARPA Agreements Officer's Representative, reprints of published articles may be attached to the Final Report. Two (2) copies shall be submitted or otherwise provided to the DARPA Agreements Officer's Representative, one (1) copy shall be submitted or otherwise provided to the DARPA Agreements Officer, and one (1) copy shall be submitted or otherwise provided to DARPA/(INSERT PROGRAM OFFICE), Attn: Assistant Director for Program Management. One (1) copy shall be submitted to the Defense Technical Information Center, Attn: DTIC-BCS, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, VA 22060-0944.

2. The Final Report shall be marked with a distribution statement to denote the extent of its availability for distribution, release, and disclosure without additional approvals or authorizations. The Final Report shall be marked on the front page in a conspicuous place with the following marking:

> "DISTRIBUTION STATEMENT B. Distribution authorized to U.S. Government agencies only to protect information not owned by the U.S. Government and protected by a contractor's "limited rights" statement, or received with the understanding that it not be routinely transmitted outside the U.S. Government. Other requests for this document shall be referred to DARPA/Technical Information Officer."

F. EXECUTIVE SUMMARY

ABC shall submit a one to two page executive-level summary of the major accomplishments of the Agreement and the benefits of using the "other transactions" authority pursuant to 10 U.S.C. § 2371 upon completion of the Agreement. This summary shall include a discussion of the actual or planned benefits of the technologies for both the military and commercial sectors. Two (2) copies shall be submitted to the DARPA Agreements Officer.

ATTACHMENT XX

FUNDING SCHEDULE

A. PROJECTED PROGRAM FUNDING COMMITMENTS

	DARPA Funding	ABC Contribution
FY 0*	$	$
FY 0*	$	$
TOTALS	**$**	**$**

DARPA funding shall be applied toward the following expenses: **(list types of expenses).**

B. ABC CONTRIBUTION

Total Contribution	**Cash***	**In-kind****
$	$	$

***Cash** contributions consist of … **(list types of contributions).**

****In-kind** contributions consist of … **(list types of contributions but also include the basis for determining the in-kind value)**.

ATTACHMENT X

LIST OF GOVERNMENT AND ABC REPRESENTATIVES

GOVERNMENT:

Dr. Steve Walker
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ABC:

(NAME)
(ABC)
(ADDRESS)
Phone:
FAX:
Email:

(NAME)
(ABC)
(ADDRESS)
Phone:
FAX:
Email:

ATTACHMENT X

DD FORM 254

ATTACHMENT X

LONG LEAD MATERIAL SUMMARY

(To be completed by the contractor and shall include a breakdown of Phase III estimates)

ATTACHMENT X

DARPA AGREEMENT AUTHORITY &
SECTION 845 OF 1994 NATIONAL DEFENSE AUTHORIZATION ACT

APPENDIX B – System Requirements Document

1.0 Hypersonic Flight

1.1. The Blackswift testbed shall use a hydrocarbon-fueled turbine-based combined cycle (TBCC) propulsion system reaching and maintaining maximum sustained Mach number of 6+ for a duration sufficient to attain propulsion system thermal equilibrium or for at least sixty seconds (whichever is greater). The flight test program shall demonstrate testbed maneuverability at Mach 6+ including execution of an aileron roll and a lateral maneuver.

1.1.1. Definitions:

1.1.1.1. "Maximum Sustained Mach number" is the maximum Mach number at which propulsion system thermal equilibrium can be attained at level cruising flight.

1.1.1.2. "Propulsion System Thermal Equilibrium" is achieved when the propulsion system reaches a steady state temperature.

1.1.1.3. "Aileron Roll" is a 360 degree coordinated rotation around the longitudinal axis while maintaining the original heading direction.

1.1.1.4. "Lateral Maneuver" is a turn of at least 1.5 g's load factor for five (5) seconds, followed by reversal and return to original heading, at the maximum sustained Mach number and nominal level flight.

2.0 Thermal Balance

2.1. The Blackswift testbed shall achieve propulsion system thermal equilibrium at the testbed's maximum Mach capability without the use of excess fuel for cooling of the propulsion system (i.e. no overboard fuel dumping).

3.0 Powered Take-Off, Ascent, Acceleration, Cruise, and Landing

3.1. The Blackswift testbed shall take off and land on a runway and shall accelerate, cruise, and decelerate, using conventional, powered aircraft operating procedures (e.g., air drop or rocket augmentation shall not be used to meet the requirements) within a usable flight test range that are consistent within range requirements.

4.0 Flight Test Operational Life

4.1. The Blackswift testbed shall have an operational life of at least two hypersonic flights at the maximum sustained Mach number on the same testbed following a flight envelope expansion buildup program with, if necessary, only minor airframe refurbishment.

4.2. The Blackswift testbed turn around time between flights shall be consistent with the proposed flight test schedule, but in any case the time to refurbish and service the testbed shall not exceed ten (10) days.

5.0 Propulsion System

5.1. The Blackswift testbed shall achieve the hypersonic flight requirements using a (TBCC) propulsion system consisting of integrated turbojet and ramjet/scramjet engines combined into a single propulsion flowpath.

5.2. The Blackswift testbed propulsion system design and configuration shall be representative of propulsion components and propulsion integration schemes used by a future, reusable, air-breathing hypersonic cruise vehicle.

6.0 Flight Test and Envelope Expansion

6.1. The Blackswift flight test program shall demonstrate flight operability and performance, including multiple flights to incrementally expand the flight envelope.

7.0 Aircraft Design Capability

7.1. The testbed shall be designed to ensure robust operation with necessary performance margin including the capability for demonstrating:

7.1.1. Propulsion system operability and thermal balance

7.1.2. Inlet start/un-start/re-start limits

7.1.3. Rejected take-off prior to lift-off

7.1.4. Robust TBCC mode transition flight conditions (accel and decel)

7.1.5. Operation through a range of dynamic pressures consistent with testbed design limits

7.1.6. Power-off landing

7.1.7. Power-off energy management (speed/wheel brakes, parachutes, etc)

8.0 Flight Test Instrumentation, Data, and Acquisition

8.1. The Blackswift flight test program shall include testbed instrumentation, ground support, air assets, and data monitoring and acquisition systems to measure and record sufficient flight test data to determine successful completion of flight test objectives, satisfying system requirements, and validating ground test data and modeling and simulation predictions.

9.0 Aircraft Fault Tolerance, Recovery, and Flight Termination

9.1. The Blackswift testbed shall be fail safe to the maximum extent achievable.

9.2. The Blackswift testbed shall have a flight termination system.

APPENDIX C – Preliminary Design Review Exit Criteria

1.0 Programmatic

The following are expected to be updated versions of the future phases:

1.1. WBS and organizational structure, including major sub-contractors and their roles and responsibilities

1.2. Integrated Master Schedule, including major milestone dates

1.3. EVMS, including major sub-contractors and cost-roll ups

1.4. Data deliverables

1.5. Security management plan

1.6. Work force status and assessment, including identification of key personnel

1.7. Procurement plan, including list of long-lead items

1.8. GFE/GFX list and estimated costs/schedules, to include flight test range assets

1.9. Risk status, management, and mitigation plan

1.10. Detailed system and discipline plan to assess, manage and reduce uncertainty.

2.0 System Engineering and Integration

2.1. Define a testbed configuration that can be shown to take off from a conventional runway, accelerate to Mach 6+, sustain Mach 6+ flight sufficient to achieve thermal equilibrium in the propulsion system, decelerate and complete powered landings, consistent with the SRD. All assumptions in the flight trajectory and performance will be consistent with the discipline design efforts (aero, propulsion, weights, materials, etc.).

2.2. Show analytically an achievable trajectory to a maximum sustained Mach number of 6+ at nominal conditions. Confirm that uncertainty in each discipline is within its allocation.

2.3. Define a preliminary design consistent with the quoted performance and fuel volume with margins, including a computer aided design (CAD) model of the outer mold line (OML) and internal systems layout, a bottoms up weight estimate, and a master subsystem equipment list.

2.4. Communication plan, including regularly scheduled telecoms and meetings

2.5. Configuration management and data management overview/status

2.6. Critical subsystem items list/master equipment list

2.7. Preliminary ICD's established, internal and external

2.8. Master verification plan

2.9. Requirements allocated appropriately (traceability from SRD).

2.10. Analytically calculate probability for loss of aircraft.

2.11. Define a preliminary design consistent with systems requirements document including internal subsystems architecture and layout, a bottoms up weight estimate, and a master equipment list.

2.12. Predict the life of the testbed, including the elements of the propulsion system, as a function of flight Mach number.

2.13. Safety plan (ground and flight), including hazards analysis and FMEA.

2.14. Determine performance of the preliminary-design testbed with 3D FNS CFD including boundary layer transition, turbulence modeling, and appropriate chemical kinetics from nose-to-tail computations over the flight regime.

2.15. Determine uncertainties in performance and weights (including bottoms up estimate) at system, subsystem, and component levels and in test data.

3.0 Aerothermodynamics

3.1. Complete Mach 0 to 6+ aerodynamics database, including propulsion, elasticity effects, and dynamics, based on wind tunnel tests and computations.

3.2. Quantify uncertainties of all aerodynamic parameters and include process documentation.

3.3. Aerothermal environments and loads should be derived from CFD and wind tunnel testing at Mach 6+, and engineering tools (validated with CFD and wind-tunnel test data) below Mach 6.

4.0 Airframe

4.1. Complete preliminary design of the airframe, including propulsion system attachments, structural layout with appropriate material systems, gauges, stiffener types, seals, joints, attachments, cooling approaches, and manufacturing approaches.

4.1.1. Perform high level trade studies anchored with analysis to evaluate multiple material systems and thermal management approaches (active cooling, hot structure, thermal protection systems, insulation, etc.) to minimize testbed total system weight

- Alternate passive metallic structures
- Insulated versus non-insulated areas
- Actively cooled metal versus passive CMC
- Use of TPS

4.1.2. Perform detailed finite element analysis of the entire testbed, including airframe/propulsion integration, over the full range of ground (including pre take-off and post landing) and flight based load cases.

4.1.2.1. Thermal

4.1.2.2. Thermal-structural

4.1.2.3. Vibro-acoustic

4.1.2.4. Flutter

4.1.2.5. Vehicle bending

4.1.2.6. Off-nominal load cases

4.1.3. Perform FEA/FEM analysis of the critical load paths and joint designs of the testbed.

4.1.4. Define concepts for all leading edges (nose, strake, wing, and propulsion surfaces) and show by analysis that adequate thermal, structural, and environmental performance can be achieved.

4.1.5. Define fuel tank design, as well as manufacturing and sealing approaches. Demonstrate via analysis that the fuel tank can survive all combined flight loads. Demonstrate that any non-inspectable regions have a life exceeding the flight plan including margin.

4.1.6. Define structural criteria for the airframe and propulsion design.

4.1.7. Define manufacturing approaches and perform a preliminary scale-up and manufacturing study.

4.1.8. Define the propulsion and airframe seal concepts and V&V plan.

4.1.9. Generate preliminary testbed assembly plan.

4.1.10. Perform preliminary design of the propulsion system integration into the airframe, accounting for thermal growth, flight loads, and installation and removal.

4.1.11. Estimate life of each component.

4.1.12. Complete testing of sub-element and sub-component (full scale, portion of component) test articles under cyclic thermal-structural, vibration, acoustic, and environmental loads of all material/structural systems, joints, attachments, seals, and manufacturing approaches not previously demonstrated at both the testbed scale and under relevant flight loads

4.1.12.1. Develop a V&V plan

4.1.12.2. Define test instrumentation

4.1.12.3. Identify test facilities

4.1.12.4. Document all manufacturing approaches, test results, and lessons learned

4.1.13. Initiate full-scale component and assembly cyclic thermal-structural, vibration, acoustic, and environmental tests of all material/structural systems, joints, attachments, seals, and manufacturing approaches not previously demonstrated at both the testbed scale and under relevant flight loads

4.1.13.1. Develop a V&V plan

4.1.13.2. Define test instrumentation

4.1.13.3. Identify test facilities

4.1.13.4. Procure and instrument test articles and have on-hand for inspection

5.0 Subsystems

5.1. Establish subsystem/component catalogs identifying the overall subsystem architecture, design, sources (COTS, modified COTS, new development required), suppliers, and associated master equipment list.

5.2. Prepare master plan for subsystem/component testing to demonstrate compliance with system capability requirements (including EMI, EMC, environmental acceptance, etc.).

5.3. Analytically demonstrate that the energy storage and power distribution system design meets testbed predicted requirements for the flight test envelope expansion program including the maximum Mach number flights.

5.4. Update avionics architecture including the functional division between autonomous operations and remotely piloted operations.

5.5. Demonstrate analytically that the thermal management system architecture design is sufficient to meet predicted internal and external thermal loads over the entire flight trajectory without dumping fuel overboard.

5.6. Demonstrate subsystem packaging can fit within the testbed mold lines and meet C.G. travel requirements over the entire flight envelope for the PDR configuration release.

5.7. Demonstrate analytically that the landing gear and braking system are sufficient to affect a rejected take-off prior to lift-off for the PDR configuration release.

6.0 Propulsion

6.1. Demonstrate ramjet/scramjet propulsion component (e.g. inlet, compressor, multiple combustors, turbine and exhaust) operability in ground tests over the flight trajectory. Calibrate engineering models and simulation tools.

6.2. Demonstrate compressor operability in a compressor distortion rig test with inlet distortion screens representative of demonstrated inlet characteristics.

6.3. Demonstrate augmentor performance and operability in an augmentor rig test.

6.4. Demonstrate propulsion component performance levels consistent with an integrated TBCC engine with sufficient thrust margin to satisfy system requirements. Validate CFD models and performance results.

6.5. Validate integrated ramjet/scramjet operability and performance results in a freejet test.

6.6. Demonstrate turbojet hot shut-down, cocooning, and re-start capability with exposure to simulated testbed flight conditions.

6.7. Complete preliminary design including facility assessment for integrated freejet engine tests at scale sufficient to include turbojets and ramjet/scramjet, with fuel-cooled structure and representative fuel control system and scheduling of inlet, nozzle, and other flowpath mechanisms. Verify the appropriateness of test configuration by CFD simulations at appropriate test conditions.

6.8. Turbojet structural, aeromechanical, aerothermal and performance assessment relative to propulsion requirements for flight testing, re-usability, and thermal management for engine and accessories (engine bay, cooling, etc).

6.9. Define propulsion control system architecture, limits, and scheduling

6.10. Demonstrate adequate thermostructural models of the propulsion system using Finite Element Analysis (FEA) at critical points across flight trajectory, including cool-down during deceleration and descent.

7.0 Guidance Navigation and Control

7.1. Show analytically an achievable trajectory to Mach 6.0+ at nominal conditions.

7.1.1. The trajectory will be designed using 6DOF equations of motion.

7.1.2. Define methodologies and uncertainties used in the 6DOF analysis.

7.1.3. The baseline trajectory has to be consistent with test range requirements.

7.1.4. Analysis must be consistent with propulsion system operability.

7.1.5. The 6DOF simulation must include realistic flight measureable guidance parameters and control laws (includes aero and propulsion forces & moments)

7.2. Show analytically that the testbed is controllable over the entire flight envelope.

7.3. Complete GN&C architecture and development plan.

7.4. Prepare software preliminary design, including update of avionics architecture and functional divisions between autonomous operations and remotely piloted operations, the degree of automated check out, status monitoring, and failure prediction to be incorporated in the avionics architecture.

8.0 Flight Test and Validation

8.1. Define a viable flight test program, including the approach for envelope expansion through hypersonic flights and potential flight range(s). In addition, show instrumentation plan that links analytical predictions, ground tests, and flight test for validation.

8.2. Define any environmental assessment studies required for flight test.

8.3. Define range infrastructure requirements

8.4. Identify range approval authority and approval process.

8.5. Define a flight test program satisfying the systems requirements document, including the approach for envelope expansion through hypersonic flights and to test and evaluate testbed capabilities.

8.6. Determine what test range requirements have to be accommodated and the associated impact to the testbed design and overall systems architecture, including ground station(s).

8.7. Demonstrate through simulation and analytically calculate maintenance times required to support repeated flight demo readiness.

8.8. Complete logistics plan for operating and maintaining the testbed out of remote sites at the selected flight test range(s).

8.9. Define overall program data requirements, maneuvers, and instrumentation to support testbed ground and flight tests, ensure range safety, support post-mission analysis, and validate CFD and engineering design predictions and tools and ground test data and techniques.

8.10. Show that the testbed design and overall system can meet test range requirements.

8.11. Descriptions of flight test missions, including CONOPS, and pre-flight and post-flight trajectory analyses.

8.12. Flight test data analysis plan.

8.13. Show adequate takeoff and terminal area landing characteristics, including power-off contingency landings.

8.14. Define ground test plan leading to a flight test program.

8.15. Preliminary approval for flight test program from the range commander.

8.16. Show plan, including simulators, to train personnel to program autonomous operations and/or to perform remotely piloted operations.

8.17. Integrated Master Schedule must include plan to complete required environmental assessment, including the quantitative risk assessment.

APPENDIX D – Critical Design Review Exit Criteria

1.0 Programmatic

The following are expected to be updated versions of the future phases:

1.1. WBS and organizational structure, including major sub-contractors on contract.

1.2. Manufacturing and assembly plan, including identification of major sources and suppliers, and completed SOW's for subcontractor RFP's.

1.3. Updated integrated Master Schedule, including major milestone dates

1.4. EVMS, including major sub-contractors and cost-roll ups

1.5. Data deliverables

1.6. Updated security management plan

1.7. Work force status and assessment, including identification of key personnel

1.8. Procurement plan, including list of long-lead items

1.9. GFE/GFX list and estimated costs/schedules, to include flight test range assets

1.10. Risk status, management, and mitigation plan

1.11. Detailed system and discipline plan to assess, manage and reduce uncertainty.

2.0 System Engineering and Integration

2.1. Update the testbed configuration and show that it can take off from a conventional runway, accelerate to Mach 6+, sustain Mach 6+ flight sufficient to achieve thermal equilibrium in the propulsion system or for at least 60 seconds - whichever is longer - decelerate and complete powered landings, consistent with the SRD. All assumptions in the flight trajectory and performance will be consistent with the discipline design efforts (aero, propulsion, weights, materials, etc.). Validation shall include ground test data with quantified experimental uncertainties.

2.2. Show analytically an achievable trajectory to a maximum sustained Mach number of 6+ at nominal conditions. Validate that uncertainty in each discipline is within its allocated margin. These analyses and validation shall include validated CFD models and tools and ground test data with quantified experimental uncertainties.

2.3. Communication plan, including regularly scheduled telecoms and meetings

2.4. Configuration management and data management overview/status

2.5. Updated critical items list and master equipment list

2.6. Updated ICD's, internal and external

2.7. 90% Design drawings released.

2.8. Manufacturing plans completed.

2.9. Ordered long lead items.

2.10. Master verification plan.

2.11. Requirements allocated appropriately (traceability from SRD).

2.12. Analytically calculate probability for loss of aircraft.

2.13. Define a Critical design consistent with systems requirements document including internal systems layout, a bottoms up weight estimate, and a master equipment list.

2.14. Predict the life of the testbed, including the elements of the propulsion system, as a function of flight Mach number.

2.15. Safety plan (ground and flight), including hazards analysis and FMEA.

2.16. Determine performance of the critical-design testbed with 3D FNS CFD including boundary layer transition, turbulence modeling, and appropriate chemical kinetics from nose-to-tail computations over the flight regime.

2.17. Determine uncertainties in performance and weights at system, subsystem, and component levels and in test data.

3.0 Aerothermodynamics

The following are expected to be updated from PDR:

3.1. Develop aero loads, temperature, and heat transfer maps for the entire flight envelope.

3.2. Complete Mach 0 to 6+ aerodynamics database, including propulsion, elasticity effects, and dynamics, based on wind tunnel tests and computations.

3.3. Quantify uncertainties of all aerodynamic parameters and include process documentation.

4.0 Airframe

4.1. Complete final design of the airframe, including inlet, combustor, and nozzle, structural layout with appropriate material systems, gauges, stiffener types, seals, joints, attachments, cooling approaches, and manufacturing approaches.

4.1.1. Update designs based on sub-element and sub-component testing

4.1.2. Complete combined loads FEA of entire testbed

4.1.3. Generate a detailed weight estimate consistent with final design and combined loads FEA.

4.1.4. Perform final design of the propulsion system integration into the airframe, accounting for thermal growth, flight loads, and installation and removal.

4.1.5. Generate manufacturing and assembly plans including process specifications and system qualification.

4.2. Complete testing of component and assembly test articles per the V&V plan

4.2.1. Document all manufacturing approaches, test results, and lessons learned

5.0 Subsystem

5.1. Update the subsystem/component catalog identifying the overall subsystem architecture, design specifications, suppliers and delivery schedules for all subsystems including backups and spare parts list.

5.2. Complete integrated subsystem and system testing demonstrating their capabilities are sufficient to meet specifications

5.3. Ground test the energy storage and ensure power distribution systems are sufficient to meet testbed predicted requirements for the flight test envelope expansion program including the maximum Mach number flights.

5.4. Breadboard and test the updated avionics architecture including the functional division between autonomous operations and remotely piloted operations.

5.5. Demonstrate analytically that the thermal management system architecture design is sufficient to meet predicted internal and external loads over the entire flight trajectory without dumping fuel overboard for the CDR configurations release.

5.6. Demonstrate subsystems packaging can fit within the testbed mold lines of the CDR configurations release and meets C.G. travel requirements over the entire flight envelope for the CDR configurations release.

5.7. Demonstrate analytically that the landing gear and braking system are sufficient to affect a rejected take-off prior to lift-off for the CDR configuration release.

6.0 Propulsion

6.1. Updated integrated propulsion cycle deck for real-time simulation of installed performance and operability of sufficient fidelity for use in testbed 6DOF analysis including simulation of the propulsion control system.

6.2. Validate TBCC propulsion component performance and aeromechanics through component rig testing – inlet, compressor, combustors, turbine and nozzle – consistent with updated engine model used in updated 6DOF analysis.

6.3. Develop ramjet/scramjet and turbine engine lifing criteria consistent with the proposed flight test plan. Analytically validate the structural integrity and life of all major propulsion system sub-elements, including thermal loads, steady state stresses, and vibratory stresses of engine blades, vanes, cases, and mechanical system. Assessment will include the interaction effects of the inlet and exhaust system.

6.4. Complete three-dimensional transient thermal analyses that confirms sufficient margin across the flight trajectory. The transient analysis will be used to confirm thermal equilibrium us attained for the baseline flight trajectory.

6.5. Complete integrated freejet engine tests at scale sufficient to include turbojets and ramjet/scramjet, with fuel-cooled structure and representative fuel control system and scheduling of inlet, nozzle, and other flowpath mechanisms. Validate updated propulsion engineering and CFD models and simulations.

7.0 Guidance Navigation and Control

7.1. Show analytically an achievable trajectory to Mach 6.0+ at nominal conditions.

7.1.1. The trajectory will be designed using 6DOF equations of motion.

7.1.2. Define methodologies and uncertainties used in the 6DOF analysis.

7.1.3. The baseline trajectory has to be consistent with test range requirements.

7.1.4. Analysis must be consistent with propulsion system operability.

7.1.5. The 6DOF simulation must include realistic flight measureable guidance parameters and control laws (includes aero and propulsion forces & moments)

7.2. Show analytically that the testbed is controllable to the level of precision required, including pilot-to-testbed interface, over the entire flight envelope.

7.3. Hardware-in-the loop test set-up complete and operational.

7.4. Update GN&C architecture (including flight termination logic) and development plan.

7.5. Prepare software critical design, including update of avionics architecture and functional divisions between autonomous operations and ground station control, the degree of automated check out, status monitoring, and failure prediction to be incorporated in the avionics architecture.

8.0 Flight Test and Validation

8.1. Incorporate all flight test program requirements into the systems requirements document, including the approach for envelope expansion through hypersonic flights and flight termination.

8.2. Demonstrate that the testbed design satisfies test range requirements, including ground station(s).

8.3. Demonstrate through simulation and analytically calculate maintenance times required to support repeated flight demo readiness.

8.4. Updated overall program data requirements and completed layouts of instrumentation to support testbed ground and flight tests, ensure range safety, support post-mission analysis, and validate analytical design tools and ground test techniques.

8.5. Demonstrate that the testbed design and overall system can meet test range requirements.

8.6. Update preliminary flight approval with the range commander for the final design configuration.

8.7. Verify approval for operation at remote take-off or landing sites.

8.8. Validate that the testbed can be transportable by ground or air to and from a remote site.

APPENDIX E – Flight Readiness Review Exit Criteria

1.0 Flight Plans complete.

Trajectory and ground track have been defined for each option of the flight test program:

- Flights within the local Edwards restricted areas,
- Flights outside Edwards restricted area followed by landings at Edwards
- Flights originating at runways up-range with landings at Edwards.
- Flight plan has been validated by full six degree of simulation including ground over-flight issues
- All reasonable contingencies have been investigated and alternate actions identified
- Contingency landing have been identified along with ground resources required and approved
- Data analysis plans have been completed and the responsible personnel identified that will perform the each discipline analysis

2.0 Quantitative Risk Assessment has been completed for planned ground tracks of all the flights. (Usually accomplished by a separate contractor that already has population data based available as well as special analysis programs.)

3.0 Range Safety Planning complete.

- Range safety requirements documents completed and satisfied
- Range safety operations plan approved
- Situation Awareness of the testbed is available from 2 independent sources
- Flight Terminate System verified and accepted by Edwards Range Safety

4.0 Environmental Assessments complete

- Additional environmental impact due to Blackswift trajectories and testbed characteristics (use of AFFTC Hypersonic Corridors is recommended)
- Environmental assessment will be required on sites to be used for the up-range data range equipment

5.0 Data range is operational

- Range is ready at all existing and new up-range sites
- All links to Ridley Mission Control and to Remote Piloting stations verified over the expected flight track with an aircraft along the track
- Mission Control is room ready and crew has been trained

6.0 Remote control of the testbed via uplink from mobile ground stations have been verified

- Crew has been trained with an aircraft simulating the normal landing trajectory as well as contingencies including power off

7.0 All facilities and equipment at the flight test site is operational

- Hangar for testbed and space parts are ready
- All ground support equipment is at the site and ready to support
- Offices and communication for project personnel are available
- Facilities at the up-range site will be ready to support when required
- Fuel for the testbed is available at both take-off sites
- (JP-7 may not be stored in tanks at take-off location)
- Arrangements have been made for transportation of the testbed and all support equipment and personnel to the up-range takeoff site when required.

8.0 All ground tests supporting the readiness to fly have been completed and analysis performed

9.0 The approval for flight has been satisfied

- Contractor and government team has given the ok to proceed into Phase III flight test based on their Test Readiness Review
- AFFTC Test Review Board (TRB) has performed an independent review of the test readiness
- Information for the AFFTC Safety Package has been obtained; the Safety Review Board reviewed the plan and sent it forward for AFFTC approval
- AFFTC commander has been briefed and given approval to fly.

APPENDIX F – Draft DOD Contract Security Classification Specification (DD254)

DEPARTMENT OF DEFENSE
CONTRACT SECURITY CLASSIFICATION SPECIFICATION

(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)

1. CLEARANCE AND SAFEGUARDING
a. FACILITY CLEARANCE REQUIRED: SECRET
b. LEVEL OF SAFEGUARD REQUIRED: SECRET

2. THIS SPECIFICATION IS FOR: *(X and complete as applicable)*			3. THIS SPECIFICATION IS: *(X and complete as applicable)*			
	a. PRIME CONTRACT NUMBER		X	a. ORIGINAL *(Complete date in all cases)*		DATE *(YYYYMMDD)* 20080219
	b. SUBCONTRACT NUMBER			b. REVISED (Supercedes all previous specs)	REVISION NO.	DATE *(YYYYMMDD)*
X	c. SOLICITATION OR OTHER NO. PS 08-02	DUE DATE *(YYYYMMDD)* 20080407		c. FINAL *(Complete Item 5 in all cases)*		DATE *(YYYYMMDD)*

4. IS THIS A FOLLOW-ON CONTRACT? [ ] YES [X] NO. If Yes, complete the following:

Classified material received or generated under _____ *(Preceding Contract Number)* is transferred to this follow-on contract.

5. IS THIS A FINAL DD FORM 254? [ ] YES [X] NO. If Yes, complete the following:

In response to the contractor 's request dated _____ , retention of the classified material is authorized for the period of _____

6. CONTRACTOR *(Include Commercial and Government Entity (CAGE) Code)*

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*

7. SUBCONTRACTOR

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*

8. ACTUAL PERFORMANCE

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)*

9. GENERAL IDENTIFICATION OF THIS PROCUREMENT

Blackswift Flight Test Program.

10. CONTRACTOR WILL REQUIRE ACCESS TO:	YES	NO	11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:	YES	NO
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION	X		a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY		X
b. RESTRICTED DATA		X	b. RECEIVE CLASSIFIED DOCUMENTS ONLY		X
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION		X	c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	X	
d. FORMERLY RESTRICTED DATA		X	d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE	X	
e. INTELLIGENCE INFORMATION			e. PERFORM SERVICES ONLY		X
(1) Sensitive Compartmented Information (SCI)		X	f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES		X
(2) Non-SCI		X	g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER	X	
f. SPECIAL ACCESS INFORMATION		X	h. REQUIRE A COMSEC ACCOUNT	X	
g. NATO INFORMATION		X	i. HAVE TEMPEST REQUIREMENTS		X
h. FOREIGN GOVERNMENT INFORMATION		X	j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS		X
i. LIMITED DISSEMINATION INFORMATION		X	k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE		X
j. FOR OFFICIAL USE ONLY INFORMATION	X		l. OTHER *(Specify)*		
k. OTHER *(Specify)*		X	Automated Information Systems (A.I.S.)	X	

DD FORM 254, DEC 1999 PREVIOUS EDITION IS OBSOLETE

12. PUBLIC RELEASE. Any information *(classified or unclassified)* pertaining to this contract shall not be released for public dissemination except as provided by the Industrial Security Manual or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release (•) Direct ( ) Through *(Specify)*

Public Release is not authorized.

to the Directorate for Freedom of Information and Security Review, Office of the Assistant Secretary of Defense (Public Affairs)* for review.
* In the case of non-DoD User Agencies, requests for disclosure shall be submitted to that agency.

13. SECURITY GUIDANCE. The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes to this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of this guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. *(Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.)*

See Attachment 1.

Item 17. (Con't.)
TTO PM
TTO PSR
SID Classification Management Office

14. ADDITIONAL SECURITY REQUIREMENTS. Requirements, in addition to ISM requirements, are established for this contract. ( ) Yes (•) No
(If Yes, identify the pertinent contractural clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.)

15. INSPECTIONS. Elements of this contract are outside the inspection responsibility of the cognizant security office. ( ) Yes (•) No
(If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.)

16. CERTIFICATION AND SIGNATURE. Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

a. TYPED NAME OF CERTIFYING OFFICIAL	b. TITLE	c. TELEPHONE *(Include Area Code)*
Lupei, Robert C	Contracting Officer for Security Matters	571-218-4689

d. ADDRESS *(Include Zip Code)*	17. REQUIRED DISTRIBUTION
Defense Advanced Research Projects Agency (DARPA) 3701 N. Fairfax Drive Arlington, VA 22203	[X] a. CONTRACTOR [ ] b. SUBCONTRACTOR [X] c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR
e. SIGNATURE	[ ] d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION [X] e. ADMINISTRATIVE CONTRACTING OFFICER [X] f. OTHERS AS NECESSARY

DD FORM 254 (BACK), DEC 1999

-ATTACHMENT #1 TO DD FORM 254 FOR PS 08-02-

For Block 13

Items 10a & 11h. Contractor is authorized the use of secure telephones (STU-III/STE) with fax. Access to classified COMSEC information requires a final U.S. Government clearance at the appropriate level. Further disclosure of COMSEC information by a contractor, to include subcontracting, requires prior approval of the contracting activity.

Item 10j. "FOR OFFICIAL USE ONLY" (FOUO) is not a classification marking. It identifies unclassified DoD information that is exempt from public disclosure. It must not be given general circulation without receiving public release authority in accordance with Block 12, above. FOUO information will be marked, transmitted, safeguarded and disposed of in accordance with DoD Regulation 5200.1-R, DoD Information Security Program Regulation.

Item 11c. Classified material generated in support of this BAA shall be classified in accordance with the source material used or DARPA-CG-498 (DRAFT), which will be provided by the DARPA program manager. All classified information received or generated under this solicitation is the property of the U.S. Government. At the termination or expiration of this solicitation, DARPA will be contacted for proper disposition instructions.

Item 11g. The contractor must prepare and forward DD Forms 1540 and 2345 to the COR for authorization before the services may be requested. Technical information on file at DTIC will be made available to the contractor if the contractor requires such information. The contracting officer will certify the field of interest relating to the solicitation.

Additional:
a. Copies of all subcontractor DD 254's should be faxed to the DARPA Classification Management Office, at 571-218-4638. Signed, scanned copies can also be emailed to: sid-clasmgmt@darpa.mil.
b. Reports of loss, compromise or suspected compromise shall be provided to the Contracting Officer for Security Matters, DARPA within 24 hours of the incident, in addition to the reporting requirements to DSS outlined in the NISPOM.
c. All of the above security requirements will flow down to any subcontractors supporting this solicitation.